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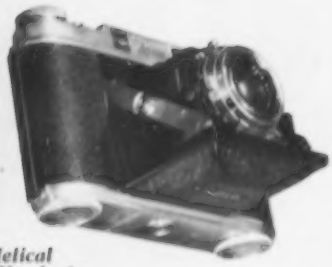

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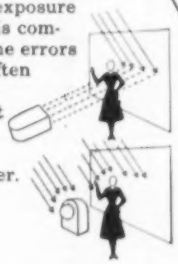

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MAY 1955

VOLUME 36, NUMBER 5

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After six months of trying, George Barris finally got New York's four most expensive models together for a shooting session. Barris illuminated his studio by bouncing the light from six 500-watt floodlamps off the walls; he used a 4x5 Speed Graphic with 5¼-in. Ektar lens for the shooting, exposure on Type B Ektachrome 1 sec at f/4.5. For more information on the four fancy female subjects, turn to page 105.

128 **1955 POPULAR PHOTOGRAPHY INTERNATIONAL PICTURE CONTEST**

COVER STORY

105 My Hour with the Big Four *by George Barris*

GENERAL INTEREST

52 How Important is the Pulitzer Prize? *by Bruce Downes*
76 Illustrator's Camera
80 The Family of Man *by Arthur A. Goldsmith, Jr.*

PICTURE FEATURES

62 Pictures from a Reader: June Duckworth
64 Smith College Girls Try New Polaroid 'Films'

CAMERA TECHNIQUE

56 Your Twin-Lens Reflex Has a Built-In Telephoto *by Bob Stubenrauch*

EQUIPMENT AND MATERIALS

58 Adox Thin-Emulsion Film *by Bob Schwalberg*
68 New, Faster Ektachrome
108 Ektachrome vs Kodachrome *by Ira R. Kohlman*
122 The New Graphic 35
130 Revolutionary Speedlight Battery

COLOR FEATURES

70 New Color Series: Introduction
72 Part I: Cameras for Color

MOVIES

134 Elia Kazan Says: Amateurs Can Be Great *by John Durniak*
136 Put Yourself in Movies *by Harvey Shaman*

POPULAR PHOTOGRAPHY DIVIDEND

89 Useful Charts and Tables

DEPARTMENTS

6 Letters to the Editor
12 Tools and Techniques *by Norman C. Lipton*
24 Stereo Today *by Robert L. McIntyre*
30 Camera Clubs *by Whit Hillyer*
34 Color Clinic *by David B. Eisendrath, Jr.*
42 Legal Problems in Photography *by George Chernoff and Hershel B. Sarbin*
50 Candid Shots
126 Photo Tips
127 Christmas Card Contest Winners
133 New Books
141 Calendar of Exhibitions
142 POPULAR PHOTOGRAPHY's Traveling Salons
144 Contests and Markets
152 What's New—Trade Notes and News

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letters to the editor

The Weston Portfolio:

Having just seen the Edward Weston presentation in the February issue I hasten to tell you how very fine it is in every respect.

It has dignity and completeness, and . . . the pictures please me very much. (The Beardless Beard is a fine photograph, but I think I am not as appealing as a sunny nude!) It is one of the best —if not *the* best—magazine presentations Edward has had and we are all grateful for it.

ANSEL ADAMS
San Francisco, Calif.

I was simply delighted at the dignified and beautifully done presentation of Edward Weston's work . . . I congratulate you on the portfolio . . . the quality of the reproductions is superb.

The rest of the issue (February) has in it a quality of excitement about the new possibilities which are opening up that I find very stimulating.

BEAUMONT NEWHALL
Rochester, N. Y.

"The Family of Man" —A Minority Report

Fifty years ago, a gigantic battle was fought between George Eastman and Alfred Stieglitz. Both represented polarities, both were mortally afraid that one would destroy the other. Eastman spent a reputed twenty million dollars to prove that all there was to photography was: "You push the button and we do the rest!" Stieglitz spent a lifetime championing photography and proving that it was not a mere hobby but a true and exceptional medium of expression. They're both dead now, but not their work. And photography needed them both.

What Eastman stood for can be seen in every newspaper, catalog, and photo album. What Stieglitz stood for can be seen in some books and magazines, but chiefly in gallery and museum exhibitions—places where the elements that make a photograph can live and breath the way its maker intended. Where it is not jazzed up, cropped out of proportion, magnified or reduced into insignificance, its print quality watered down to a pulp. Where the integrity of the artist stands for the picture, and the picture for the artist.

The present exhibition at the Museum of Modern Art seems to me a major achievement in eradicating what all those years and battles had accomplished. Instead of being a milestone in fostering the best that photography has produced and relating it to other media—as the Boston Museum of Fine Arts did several decades ago in an exhibition of prints by Dürer, Goya, and Stieglitz—"The Family of Man" uses and proclaims photography as nothing more than illustration.

The idea itself is a literary one, fit for a magazine. And *Life* has done it with the best of talent remarkably well. Some of the most striking shots, in fact—like the birth sequence—have been seen by some ten or fifteen million people there. But the idea of the show at the Museum, the story, the very concept of "The Family of Man" is rather trite. What's worse, it is based on ignorance if not a lie. Sure enough, Walt Whitman and Carl Sandburg and so many before them have sung of it, but theirs was a poetic concept. When it comes to documenting it photographically—in what respects *does* man feel alike?"

Biologically, we are of course a family: genus. But in social, moral, ethical values we differ enormously. To a Navajo Indian, success does not imply individual piling up of wealth. He may not even have the equivalent of the word "success." A mother's smile to a child may appear the same in China or Alaska but the family relation will be as unlike our own as imagination will allow. And the universal picture of men at work will show a resemblance in little more than the flexing of their muscles.

The knowledge of our diversity, an anthropological fact, and not the Victorian myth of human nature being everywhere the same is what will insure a future for "the family of man." However, nothing in this exhibit touches on this at all. On the contrary, it is glossed over. And to make us forget that only in its most superficial aspects are man's activities shown here, the show has been laid over with a confectioner's icing of snippets from the Bible, Laotse, James Joyce, American Indian tribes.

Let's assume that somebody—not having seen at all *Life's* stupendous coverage over two decades—will come out of the exhibition exhilarated by Sandburg's paean, brother-in-law Steichen's exhibition, and Dorothy Norman's search for captions. So the world really is a "family of man," shown in the very city where diversity of thought and backgrounds, semantic concepts, and religious goals make of the United Nations a Tower of Babel. Let's assume that exhilarated person were asked what progress photography has made in which countries, what characteristics have become crystallized in what parts of the world, and last but not least, who are the artists who master the camera with a sensitive eye and technical perfection?

But how can one remember all those little names pasted on? After all, it's the message, not the artist, that counts. And to illustrate that message everything is allowed: photographs blown up into photostats, others tacked on, cut into, repeated, superimposed. And all that for what purpose? Publicity, of course. Like waving the flag. Who, if anybody, will dare to declare himself against "The Family of Man"?!

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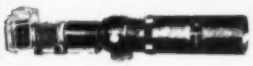

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KODAK 35 Rangefinder Model, f3.5 Lens ..... usually 39.50
now only **29.50**

CONTAX III f2 Sonnar Lens, built in exp. meter usually 134.50
now only **104.50**

—THIS MONTH ONLY—

35mm BULK FILM LOADER

W/10 EMPTY CARTRIDGES **4.95**

W/100 Ft. Fresh Safety Film, Kodak Plus X or XX 8.39

UNBEATABLE SLIDE PROJECTOR VALUE!

Brand New 2x2 Popular Name 300 Watt Blower Cooled Slide Projector. (We are not permitted to disclose the name.) WITH FULLY AIRSQUIPT AUTOMATIC SLIDE CHANGER AND STURDY CARRYING CASE.

Reg. 59.50

Minifilm Special **39.50**

8mm BOLEX PAN CINOR ZOOM LENS

FOR ALL 8mm CAMERAS!!
9 Focal Length Lenses in 1 Serve for every assignment.

Brand New 219.50

TERRIFIC!! BOLEX H16 CAMERA OUTFIT

Complete With 3 Lenses At A WHOPPING LOW PRICE...

- Automatic Threading
- Built in Frame Counter
- Single Sprockets for Sound
- Forward or Reverse
- Single Frame Exp.
- 8 to 64 F.P.S.

USED 236.00 COMPLETE

LENSES:
15mm f2.8 Wide Angle
25mm f1.9 Normal Angle
75mm f4.5 Telephoto

LUMIMETER II ENLARGING EXPOSURE METER

An ingenious device to eliminate guesswork from enlarging . . . single dial provides data for exposure time and grade of paper.

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LUMIMETER II (for AC-DC operation) ..... *only* **9.95**

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THERE ARE 44,367,120 DEALS IN THIS AD!! — PICK YOURS!

From Minifilm's vast supply of Used Photographic Equipment. CAMERAS, LENSES, PROJECTORS, ENLARGERS, etc. ALL LATEST MODELS. All in First Class Condition. ALL PRICED SENSATIONALLY LOW!!

ONLY MINIFILM . . . offers you these distinct price quotations! Highest trade-in allowances! Lowest selling prices! Save tremendously on used like new equipment . . . all fully guaranteed. The below listed items were compiled as a guide for your convenience.

1. Select the equipment of your choice at the price shown in column one for new equipment or column two for used equipment.
2. If you have equipment to trade, check if it is represented in listing and deduct the allowance shown for it in column three.
3. Rush your order (and trade-in equipment if you have such) plus your remittance to cover—or instructions to ship C.O.D. for the balance.

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EXPOSURE METERS

	New	Used	Trade-in
Brockway (M3)	$16.95		$ 8.00
De Jur Dual Professional	26.95	$15.50	10.00
GE WD 68	24.50	11.75	8.00
GE PR1	32.50	17.50	10.00
GE Mascot PR30	15.95	9.50	6.00
Leica Meter	24.00	15.75	10.00
Minox	21.45	13.50	8.00
Norwood Director	37.95	16.95	10.00
Polaroid	15.75	9.50	6.00
Sixti	23.95	15.50	10.00
Weston Cadet	19.95	12.50	8.00
Weston DR w/case	16.50		8.00
Weston Master II Univ	29.95	16.95	12.00

Lenses for LEICA, CANON, CONTAX, NIKON

	New	Used	Trade-in
21mm f4.5 Zeiss Biogon ¢	$249.00		$130.00
28mm f3.5 Serenarg W.A.	134.00	$ 86.00	60.00
35mm f2.8 Biogon W.A.¢	183.00	127.50	100.00
35mm f3.5 Elmar W.A.¢		48.00	35.00
35mm f3.5 Nikkorg W.A.	97.50	57.00	40.00
35mm f2.5 Nikkorg W.A.	149.50	97.50	70.00
35mm f3.2 Serenarg W.A.	94.00	72.00	45.00
35mm f2.8 Serenarg W.A.	110.00	78.00	50.00
35mm f3.5 Summarong W.A.	96.00	62.00	40.00
50mm f3.5 Elmarg	57.00	34.00	30.00
50mm f1.4 Nikkorg	199.50	119.00	80.00
50mm f1.5 Sonnarg	175.00	119.50	90.00
50mm f2 Summitar	88.00	63.75	45.00
50mm f2 Summicrong	156.00	106.00	85.00
50mm f1.5 Summerifg	177.00	114.00	90.00
85mm f2 Nikkorg	179.50	99.00	70.00
85mm f1.5 Serenarg	238.00	137.50	110.00
85mm f2 Sonnarg Tele	229.00	109.00	80.00
85mm f1.5 Summarexg	360.00	186.00	150.00
90mm f4 Elmarg	90.00	58.00	40.00
100mm f4 Serenarg	87.00	49.00	35.00
135mm f4.5 Leitz Hektor Blk		69.00	40.00
135mm f4.5 Hekto¢	135.00	88.50	75.00
135mm f3.5 Nikkor¢	145.00	85.00	62.00
135mm f4 Serenar ¢	108.00	69.00	50.00
135mm f4 Sonnar ¢	146.00	88.00	70.00
135mm f4.5 Steinheil ¢	54.50	37.50	25.00
200mm f4.5 Telyt ¢	156.00	104.00	75.00
300mm f5.6 Kilar Repscope ¢	284.50	178.00	120.00
400mm f5.6 Novoflex ¢	189.50		85.00

Prompt Free appraisal and Quotation will be gladly rushed to you by return mail. Mail Orders promptly filled. Paid or C.O.D., F.O.B. New York. Note: On C.O.D. kindly include 10% Deposit on Order. Include Postage. Prices Subject to change.

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Dollar For Dollar . . . it
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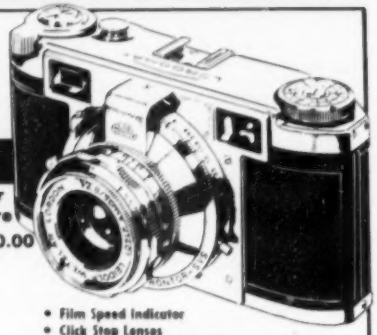

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The 1955 Camera sensation from Wetzlar Germany offering features that compare with the best yet selling for below $100.00

- RAPID TRANSPORT LEVER
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- INTERCHANGEABLE LENSES
- Shutter Speeds from 1 second to 1/300 of a second
- Built in Self Timer
- Adjustable MX Flash Synchronization
- Built in Orange Filter for Easier Focusing
- Film Speed Indicator
- Click Stop Lenses
- Double Exposure Prevention
- Positive Automatic Lens Coupling System
- Detachable Back for Easier Loading
- Die Cast Aluminum Body
- Rich Pebble Grain
- Leather Trim

BRAND NEW 35mm LORDOMAT f2.8 Lordon, Coated, Click Stops

Deluxe Leather Eveready Case..... 9.95
Patented Taco Color Flashgun..... 7.95

89.50

Lenses for EXAKTA, CONTAX D, PRAKTICA, PENTACON

	New	Used	Trade-in
28mm f3.5 Angenieux ¢	$120.00	$ 78.50	$ 60.00
35mm f2.5 Angenieux ¢	99.50	58.00	50.00
40mm f3.5 Cassaron ¢	49.50	31.00	20.00
50mm f2.8 Westanar Auto Diag	69.50	44.50	30.00
50mm f1.9 Xenon Autog	169.50	119.00	90.00
58mm f2 Biotar ¢		49.00	35.00
58mm f2 Biotar preset ¢	125.00	67.50	45.00
58mm f1.9 Primoplan ¢		44.00	30.00
75mm f1.5 Biotar ¢	216.50	98.50	75.00
85mm f2.8 Steinheil¢	65.00	42.00	30.00
90mm f2.5 Angenieux ¢	84.50	58.50	40.00
90mm f1.8 Angenieux ¢	149.50	99.00	75.00
90mm f4 Sun ¢	51.95	24.50	20.00
90mm f4 Sun preset ¢	64.95	33.50	25.00
135mm f3.5 Angenieux ¢	75.50	45.00	30.00
135mm f4.5 Steinheil ¢	60.00	39.50	25.00
135mm f3.8 Sun ¢	59.50	29.50	20.00
135mm f3.5 Sun preset ¢	74.95	36.50	25.00
135mm f3.5 Tele Colmar preset ¢	84.95	44.00	35.00
135mm f4.5 Tele Xenar ¢	58.95	39.50	30.00
135mm f4 Zeiss Triotar ¢	75.00	49.00	35.00
180mm f5.5 Tele Xenar ¢	82.75	54.50	40.00
180mm f2.8 Zeiss Sonnar preset		229.00	150.00
240mm f5.5 Tele Xenar ¢	115.75	78.00	55.00
360mm f5.5 Schneider Tele Xenarg	169.95	114.00	80.00
400mm f5.6 Novoflex ¢	189.50		85.00
400mm f5.5 Tele Megor ¢	199.50	139.00	100.00

ACCESSORIES FOR IMPORTED CAMERAS

	New	Used	Trade-in
Leitz Focaslide	$ 36.00	$23.00	$15.00
Leitz Imarect Finder	39.00	24.00	16.00
Leitz B.C. Flashgun	24.00	18.00	12.00
Leitz Mirror Reflex Housing	102.00	69.00	50.00
Zeiss Revoiv. Univ. Finder	80.00	43.00	30.00
Zeiss Contameter Close Up	81.00	43.00	30.00
Universal Image Erecting Finder	24.50	16.00	10.00
Universal Zecm Finder	22.50	15.00	9.00
Micro Ibso Attach	108.00	79.00	60.00
Rapid Leicavit for IIIf	24.00	16.00	10.00
Novoflex Bellows for Leica, Contax	39.50		15.00
Novoflex for Exakta, Pentacon, etc	39.50		15.00
Novoflex Reflex Housing for Leica-Contax	145.00		75.00
Novoflex tripod and Stereo Rackover	25.00		12.00
Novoflex Universal Panoramic attach	11.50		

LEICA CONTAX NIKON CANON

	New	Used	Trade-in
Canon IV S 2 f1.8 Serenarg*	$284.00	$144.00	$130.00
Contax I f2.8 Tessar		46.00	30.00
Contax I f2 Sonnar		59.00	40.00
Contax II f2 Sonnar		86.00	70.00
Contax III f2 Sonnar		109.00	80.00
Contax IIA f2 Sonnar ¢*	345.00	167.00	125.00
Contax IIA f1.5 Sonnar ¢*	374.00	189.50	145.00
Contax IIIA f2 Sonnar ¢*	383.00	194.50	150.00
Contax IIIA f1.5 Sonnar ¢*	412.00	218.95	165.00
Leica Std f3.5 Elmar		39.00	30.00
Leica IIIA f2 Summar		85.00	65.00
Leica IIIC f3.5 Elmar ¢		92.50	70.00
Leica IIIC f2 Summitar ¢		124.00	100.00
Leica IIIF f3.5 Elmar ¢*	237.00	152.00	120.00
Leica IIIF f2 Summitar ¢*	268.50	148.00	130.00
Leica IIIF f2 Summicron ¢*	336.00	184.50	160.00
Leica IIIF f1.5 Summarit ¢*	357.00	197.50	175.00
Leica M3 body	288.00		150.00
Leica M3 f3.5 Elmar ¢*	348.00		175.00
Leica M3 f2 Summicron ¢*	447.00		220.00
Leica M3 f1.5 Summarit ¢*	468.00		230.00
Nikon f2 Nikkor ¢*	269.00	154.00	105.00
Nikon f1.4 Nikkor ¢*	299.95	167.50	125.00

35MM SINGLE LENS REFLEX

	New	Used	Trade-in
Alpa 4 f2.8 Delft Alfinong*	$239.00	$159.00	$125.00
Alpa 5 f1.9 Xenong*	359.00	219.00	155.00
Alpa 7 f1.8 Switarg*	459.00		200.00
Exa f2.8 Westar MXg	85.00	46.00	35.00
Exa f3.5 Tessar MXg	109.50	67.50	50.00
Kine Exakta f3.5 Tessar ¢*		72.50	50.00
Kine Exakta II f2 Biotar		109.00	85.00
Exakta V f2 Biotar MXg		139.00	110.00
Exakta VX f2.8 Tessar pre-set MXg	259.50	152.00	120.00
Exakta VX f2 Biotar pre-set MXg	335.00	172.00	135.00
Exakta VX f2.8 Auto Westanar	239.50	156.00	125.00
Exakta VX f1.9 Auto Xenon	341.70	197.00	155.00
Exakta VX f2 Auto Westagon	279.50		140.00
Contaflex f2.8 Tessar Auto Rf¢*	169.00	87.00	70.00
Contax S f2 Biotar P.S.¢*		109.00	75.00
Contax D f2 Biotar P.S.¢*	199.00	119.00	80.00
Pentacon f2.8 Westanar Autog*	249.50	119.00	95.00
Pentacon f2 Biotar pre-set*	249.50	129.00	100.00
Praktica FX f2.8 Wester MXg	99.50	42.50	30.00
Praktica FX f1.9 Primo MXg	149.50	67.00	45.00
Praktica FX f2 Biotar P.S. MX	189.50	84.00	65.00
Praktiflex f2 Biotar ¢		69.00	45.00
Rectaflex f2 Xenon RF ¢*, case & shade	350.00	137.50	105.00

EKTACHROME (35mm 20 exp. 3 times as fast as Kodachrome)

1 roll (Daylight or Indoor) 1.85
DEVELOPING & MOUNTING 1.25

SUPER SPECIAL 3 rolls for 7.50 — ORIG. FACTORY PACKED — Reg. Price 5.10

AT MINIFILM ONLY **2.85**

35mm EKTACHROME / ANSCO COLOR RELOADS

These Reload Cartridges are Laboratory packed and Quality Controlled by MINIFILM in its own Air Conditioned Darkrooms. Twenty and 36 Exposure Cartridges are manufactured daily from 100 ft. rolls received fresh from Eastman Kodak and Ansco. Careful supervision and tremendous sales turn-over insures your getting reloads which are equal in quality and freshness to cartridges packed at the factory. THE ONLY THING DIFFERENT IS THE PRICE. Take a tip from film-wise professionals . . . USE MINIFILM 1956 Dated RELOADS. Daylight or indoor.

KODAK'S MIRACLE TRI-X

A Revolution In Black & White
200 Daylight — 160 Tungsten

35mm 20 Exp. Reloads . . 6 Rolls for 2.49
35mm 36 Exp. Reloads . . 4 Rolls for 2.39
Bulk Film, 100 ft. 5.75

120-620 EKTACHROME

120-620 Ektachrome . . . . 3 Rolls 5.50
828 Ektachrome . . . . . 3 Rolls 4.95
Prices Above Include Developing
All Film Above Factory Packed

EKTACHROME

20 Exp. Reloads . . . . . 1 Roll 2.50
20 Exp. Reloads . . . . . 3 Rolls 6.65
INCLUDES Developing and mounting
BULK FILM—28 FT.
8 Free Carts—10.95

ANSCO COLOR

20 Exp. Reloads . . . . . 1 Roll 1.95
20 Exp. Reloads . . . . . 3 Rolls 5.55
BULK FILM—28 FT.
8 Free Carts—7.95

35mm KODACHROME

20 EXP. 1956 DATED
3 ROLLS 5.55

FAST MAIL ORDER—Please enclose 20¢ EXTRA for postage & handling on all film orders.

30 DAY FREE TRIAL PERIOD

10% DOWN!

You Can Buy That Camera Now Under Minifilm's Time Payment Plan with just 10% Down—10% A Month. Trade In of Your Old Equipment Can Also Be Accepted As Down Payment.

35MM CAMERAS

	New	Used	Trade-in
Ansco Karomat f2 RF MXg	$125.00	$ 73.50	$ 55.00
Argus A2 f4.5		14.50	9.00
Argus C-3 RF case and flash	66.50	32.50	28.00
Argus C4 f2.8 RF MX	84.50	46.50	35.00
B&H Foton f2 RF MX	498.00	265.00	200.00
Bolsey B f3.2 RF g	49.50	24.50	15.00
Bolsey B-2 RF, case and flash	66.50	34.00	25.00
Bolsey B22 f3.2 RF g*	69.50	35.50	30.00
Bolsey C f3.2 Reflex RF g*	89.50	39.95	30.00
Bolsey C22 f3.2 Reflex RF g*	99.50	67.50	50.00
Clarus f2.8 RFg*		37.50	30.00
Contessa f2.8 RF meter MXg*	153.00	86.50	70.00
Ditto 99 f2.8 Rap. Seq. g*	49.00	37.00	25.00
Edinex III RF f2 Xenong*	64.50	41.50	30.00
Kodak 35 f3.5 RFg*		29.95	20.00
Kodak Flash Bantam f4.5g*	56.00	29.00	20.00
Kodak Bantam 828 f4.5		18.00	12.00
Kodak Bantam Spec. f2 RFg		57.00	40.00
Kodak Pony 828 f4.5 C*	29.50	17.00	12.00
Kodak Pony 135 f4.5 C*	29.75	18.00	12.00
Retina II f2 Xenon RF		59.00	40.00
Kodak Retina IIA RF MXg	127.50	72.50	65.00
Kodak Signet f3.5 Ektar RFC*	87.50	46.50	40.00
Kodak Town & Country f3.9 RF case & flash	75.00	49.00	30.00
Minox IIIS chain & case*	139.50	85.00	60.00
Minox II f3.5g		49.50	30.00
Mercury II f2.7g*	41.50	19.50	12.00
Robot f2.8 Tessar Rap Seq		39.00	25.00
Robot II f2 Biotar Rap Seq		54.00	30.00
Robot IIA f1.9 Xenon Rap Seq.g*	89.50	57.00	40.00
Robot Star f1.9 Xenon Rap Seq.g*	127.50	79.50	55.00
Voigt Prominent f2 RF MXg	220.00	131.50	100.00
Voigt Prominent f1.5 RF MXg	270.00	137.25	105.00
Voigt Vitessa f2 RF MXg	127.50	84.00	55.00
Voigt Vito II f3.5g*	54.50	31.00	25.00
Voigt Vito III f2 RF MX*	119.50	79.50	55.00

35MM STEREO CAMERAS

	New	Used	Trade-in
Edixa Stereo f3.5g	$ 69.50	$ 39.50	$30.00
Iloca II f3.5g*	69.50	49.50	30.00
Kindar f3.5 RFg*	99.50		45.00
Kodak f3.5g*	84.50	57.50	40.00
Revere f3.5 RFg*	174.50	77.00	70.00
Stereo Realist f3.5 RFg*	159.00	74.50	60.00
Stereo Realist f2.8 RFg*	198.50	119.00	95.00
TDC Colorist f3.5g*	99.99	69.00	45.00

2¼x2¼ REFLEX CAMERAS

	New	Used	Trade-in
Ansco Auto Reflex f3.5g	$189.25	$ 84.00	$ 60.00
Ciroflex B f3.5g		29.00	20.00
Ciroflex C f3.5/400g	75.00	37.00	25.00
Ciroflex D f3.5g	75.00	46.00	30.00
Ciroflex E f3.5/400g*	99.50	59.50	40.00
Ciroflex F f3.2 MXg		72.00	50.00
Dejur f3.5g*	99.50	49.50	30.00
Exakta 66 f2.8 Tessar MXg	319.50	218.00	165.00
Graflex 22 f3.5 C*	93.00	47.50	35.00
Hasselblad f2.8 Ektar /1600 C*	476.00	279.00	215.00
Hasselblad f2.8 Ektar /1000 C*	379.50	212.50	175.00
Ikoflex IA f3.5 Tessarg*	96.00	59.00	35.00
Ikoflex IIA Auto f3.5 Tessar MXg*	126.00	74.95	60.00
Kodak Reflex I f3.5g*		37.00	25.00
Kodak Reflex II f3.5g*		59.00	40.00
Primar Reflex II f3.5 Tessarg*	169.00	124.00	90.00
Ricohflex VI f3.5g*	44.95	22.00	15.00
Rolleicord I f4.5 Triotar		39.00	25.00
Rolleicord II f3.5 Triotar		47.50	30.00
Rolleicord III f3.5 Xenarg*		67.50	45.00
Rolleicord IV f3.5 Xenar MXg	149.50	79.50	70.00
Auto Rollei f3.5 Xenar		78.00	60.00
Auto Rollei f3.5 Tessar		88.95	65.00
Auto Rollei IIB f3.5 Xenarg*		98.50	80.00
Auto Rollei IIB f3.5 Tessarg*		107.50	90.00
Auto Rollei IIB f2.8 Tessarg*		149.50	110.00
Latest Rollei III f3.5 Xenar MXg	234.50	138.00	110.00
Latest Auto Rollei III f3.5 Tessar MXg	249.50	154.00	120.00
Latest Auto Rollei 2.8 C f2.8 Xenctar MXg	309.50	183.50	160.00

ROLL FILM CAMERAS

	New	Used	Trade-in
Ansco Super Speedex f3.5 RFg*	$119.50	$ 79.50	$ 55.00
Kodak Tourist II f4.5g*	72.50	39.50	28.00
Kodak Cheyron f3.5 RF 800 MX	198.50	142.50	100.00
Kodak Medalist I f3.5 Ektar		56.00	45.00
Kodak Medalist II f3.5 Ektarg*	304.75	112.00	80.00
Polaroid Highlander	69.95	42.50	30.00
Polaroid Landg*	89.75	42.00	35.00
Polaroid Pathfinder f4.5 RF	249.50	162.00	123.00
Super Ikonta A f3.5 Tessar RFg*	99.00	57.00	40.00
Super Ikonta B f2.8 Tessar RF g*	139.00	87.50	65.00
Super Ikonta BX f2.8 Tessar RFg*	163.00	102.00	75.00
Super Ikonta C f3.5 Tessar RFg*	114.00	62.00	45.00
Voigt Bessa II f3.5 RF MXg	124.50	69.00	50.00

PRESS CAMERAS

	New	Used	Trade-in
23 Ann. Graphic RF f4.5 lens		$ 84.50	$ 60.00
34 Ann. Graphic RF f4.7 lens		92.00	60.00
45 Ann. Graphic RF f4.7 lens		97.00	80.00
2¼x3¼ Century Graphic f4.5 KRF g*	$145.45	99.00	75.00
4x5 Super D Graflex f5.6 Ektar Auto Diag*	299.50	159.00	115.00
2x3 Linhof Super Tech RF 3-lenses comp	569.90	339.50	280.00
4x5 Linhof Super Tech RF f4.5 MX	389.75	207.00	165.00
2¼x3¼ Pacemaker Speed f4.5 KRFg*	313.95	147.50	120.00
3¼x4¼ Pacemaker Crown f4.7 KRFg*	267.45	149.00	110.00
4x5 Pacemaker Speed f4.7 KRFg*	315.45	172.50	135.00

SLIDE PROJECTORS

*Blower cooled

	New	Used	Trade-in
Ampromatic, 500 W. Automat, case*	$ 84.50	$ 41.50	$30.00
Argus PB 300, case*	48.50	27.00	20.00
GoldE Cromatic Auto 300 W, case*	59.95		
GoldE Manumatic 300 W *	58.50	27.50	20.00
GoldE Coronet 300 W, case*	44.75	22.00	15.00
GoldE Reflex 300 W, case 2¼ *	86.50	49.00	35.00
Kodaslide Merit 150 W	26.10	16.50	10.00
Kodaslide Highlux III 300 W case *	56.50	38.50	25.00
Kodaslide Signet 500 W*	72.50	49.00	35.00
Kodaslide Table Viewer 4x	37.50	27.00	20.00
LaBelle 22 Automatic 200 W *	69.00	46.50	35.00
LaBelle 55 Automatic 500 W *	95.00	55.00	40.00
LaBelle 75 Auto Remote 500 W case *	154.95	99.50	75.00
Nord Stereo 300 W*	99.50	69.00	50.00
Revere 444 300 W*	69.50	39.50	30.00
SVE Instructor 300 W slide & strip *	89.50	57.50	40.00
TDC Headliner 300W Semimatic *	49.99	29.50	20.00
TDC Mainliner 300W Semimatic*	59.50	31.00	25.00
TDC Model D 300W Semimatic*	67.50	36.95	28.00
TDC Streamliner 500 W Semimatic *	84.50	49.50	35.00
TDC Duo 300W 2¼ *	67.50	36.95	28.00
TDC Duo 500W 2¼ *	84.50	52.50	40.00
TDC Project-or View 150W	69.50	47.00	35.00
TDC Project-or View 200W*	77.50	48.50	35.00
TDC Stereo Projector 500W*	169.50	105.00	80.00
TDC Stereo Projector View 300W*	144.50	98.50	70.00
Viewlex V 22C 300 W strip & slide *	86.75	55.00	40.00
Viewlex V33L 300W Auto*	67.00	41.50	30.00
Viewlex V35L 500W*	79.95	47.50	35.00

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Ansco Color Mounted	1.00
Ektachrome Mounted	1.25
Kodachrome Mounted	1.50
120-620 Ektachrome	1.00
120-620 Ansco Color	.75

Quality Color Prints

Wallet	20¢
2x (2¼ x 3¼)	25¢
3x (3¼ x 4)	47¢
4x (4 x 5)	57¢
5x (5 x 7)	89¢
8x (8 x 10)	1.85

SLIDE DUPLICATES

5 for 1.00 — 25 for 4.00

8MM CAMERAS

	New	Used	Trade-in
B&H 220 f2.5g	$ 49.95	$ 27.00	$ 20.00
B&H 134V f2.5g	89.95	47.00	35.00
B&H 134TA f1.9 Turg	159.95	99.50	75.00
B&H 172 B f1.9 Magg	164.95	102.50	80.00
B&H 172A f1.9 Mag. Turg	199.95	119.50	95.00
Bolex C 8 f2.8 Yvarg	89.50		40.00
B & H 252 f2.3 Monterey g	59.95	39.00	28.00
Bolex B8 f2.8 Yvar Turg	119.50	79.00	55.00
Bolex H8 Leader f1.9 Turg	259.50	149.00	115.00
Bolex L 8 f2.8 Yvarg	89.95	49.00	35.00
Bolex H 8 De Luxe f1.9 Turg	365.75	247.50	200.00
Bolex 8mm Paneinar f2.8g	219.50	144.00	110.00
Kodak Brownie f2.7g	37.50	22.50	15.00
Kodak Brownie f1.9g	46.75	32.00	25.00
Cine Kodak Reliant f2.7g	84.50	52.00	35.00
Cine Kodak Magazine f1.9g	149.50	82.50	65.00
De Jur Citation f2.5g	77.50	39.50	30.00
De Jur Embassy f2.5 Magg	106.95	69.50	55.00
De Jur Fadematic f1.9g	149.50	93.00	65.00
Keystone K-29 Pathfinder f2.8g	49.95	29.50	20.00
Keystone K-30 Capri f2.8g	54.95	34.50	25.00
Keystone K-32 Olympic f2.5g	79.95	46.50	30.00
Keystone K-35 Olympic Tur f1.9g	119.95	77.50	60.00
Keystone Bel Air f2.5 Magg	89.50	52.00	35.00
Keystone Riviera f1.9 Mag Turg	139.95	92.50	65.00
Revere 50 f2.8g	49.50	24.00	18.00
Revere 55 f2.8g case	$73.50	$44.50	$30.00
Revere 88 f2.5g	74.00	33.50	25.00
Revere 99 f2.8 Turg	99.50	54.50	35.00
Revere 80 f2.5g	97.50	46.50	35.00
Revere 84 f1.9 Turg	147.50	84.00	70.00
Revere 67 f2.8 Mag Turg	119.50	59.50	60.00
Revere 40 f2.5 Magg	99.50	53.50	40.00
Revere 44 f1.9 Mag Turg	154.50	94.50	65.00
Revere 861 f1.9 Magg	137.50	81.50	60.00
Revere 863 f2.5 Mag Turg	142.50	84.00	58.00

8MM PROJECTORS

	New	Used	Trade-in
Ampro Futurist 750W case	$149.95	$ 84.50	$60.00
B&H 221 500 W Case	84.50	49.50	35.00
B&H 253 Monterey 500 W Case	99.50	55.75	45.00
B&H Regent 500 W Case	179.95	104.00	80.00
Bolex M 8 500 W Case	169.50	114.00	85.00
De Jur 750 W Case	159.50	84.00	65.00
De Jur 1000 W Cordomatic Case	177.50	105.00	85.00
Keystone K70C Brightbeam 500 W Case	79.90	44.95	35.00
Keystone K80 500 W Case	99.65	67.50	45.00
Keystone K 95 750 W Case	119.50	74.50	60.00
Keystone K109 750 W Splicer Case	159.50	89.50	65.00
Kodak Brownie 300 W Case	62.00	41.95	30.00
Kodascope B 71A 1000 W	110.00	72.50	50.00
Revere 85 500 W	114.50	59.25	45.00
Revere 90 750 W	125.00	77.00	60.00

16MM CAMERAS

	New	Used	Trade-in
Auricon Cine Voice f1.9g	$ 749.00	$538.00	$375.00
Arriflex 16 (complete 3 lenses)	1990.00		
Bell and Howell Automaster Mag Tur f1.9		129.00	100.00
B&H 200 f2.5 Magg	174.95	114.50	85.00
B&H 200T f1.9 Mag Turg	244.95	158.00	125.00
B&H 700A f1.9 Tur		149.00	110.00
B&H 70 DL f1.9 Turg	365.50	218.00	175.00
Bolex H16 Leader f1.9 Turg	269.50	151.00	120.00
Bolex H16 Leader (3 lenses compt) g	399.45	236.00	180.00
Bolex H 16 De Luxe f1.4 Tur Octamtrg	486.00	319.00	250.00
Bolex Pan Cinor f2.8 caseg	349.50	199.00	165.00
Cine Kodak Mag. f1.9		66.00	50.00
Cine Kodak Royal Mag. f1.9g	169.50	104.50	80.00
Cine Kodak Special II f1.9g Tur	990.00	599.00	400.00
Keystone A 9 f2.5g	99.50	57.50	40.00
Keystone A12 f1.9 Turg	159.50	97.00	70.00
Keystone K50 f2.5 Magg	129.50	82.50	60.00
Keystone K55 f1.9 Mag Turg	175.00	117.00	80.00
Pathe Super 16 Turg	450.00	229.00	180.00
Revere 16 f1.9 Magg	182.50	87.00	60.00
Revere 26 f1.9 Mag Turg	212.00	105.00	70.00
Victor IV f1.9 Tur		99.00	65.00

16MM PROJECTORS

	New	Used	Trade-in
Ampro Imperial 1000 W case	$299.50	$197.00	$150.00
Bolex G-8 16 750 W (8mm & 16mm)	319.50	235.00	150.00
B&H 273A Statesman 750 W Case	199.95	119.00	100.00
B&H 173 Diplomat 1000 W Case	299.95	185.00	150.00
Keystone A82 750 W Case	139.50	76.00	60.00
Keystone K161 750 W Splicer Case	159.50	87.95	65.00
Kodascope Royal 1000 W	240.00	164.00	115.00
Revere 48 750 W	160.00	97.00	60.00

16MM SOUND PROJECTORS

	New	Used	Trade-in
Ampro DeLuxe Stylist 1000 W case	$419.85	$265.00	$185.00
Ampro Premier 40 1000 W case	579.00	397.00	250.00
B&H 285C 750 W Case	449.95	249.50	200.00
B&H 285 BI 1000 W Case	514.95	319.00	230.00
B&H 202C 1000 W Magnetic Case	699.00	444.50	375.00
Kodascope Pageant 1000 W Case	375.00	259.00	190.00
Movie Mite 63LM 300 W Case	275.50	163.00	115.00
Revere SP16 750 W Case	325.00	163.00	135.00
Victor Lite Wt 60-4 750 W Case	395.00	269.00	180.00

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2-35	both 35 and 2¼ x2¼	AU	Auto Focus
45	up to 4x5		
57	up to 5x7		

	New	Used	Trade-in
23C or CL De Jur II f4.5g	$ 99.50	$ 67.50	$ 45.00
23C or CL De Jur I f4.5	126.50	82.50	60.00
57D Elwood S2	69.00	44.50	30.00
35C Federal 135 f4.5 storeay	49.95	29.50	20.00
23D Federal 240 f7.9 storeay	24.95	14.50	10.00
23D Federal 269 f6.3 storeay	39.75	24.50	15.00
23C Federal 279 f6.3 storeay	46.95	28.50	20.00
23CL Federal 269CL f6.3 storeay	53.00	37.00	25.00
23C Federal 311 f4.5 storeay	69.25	43.50	30.00
23CL Federal 315CL f4.5	80.00	49.50	40.00
45D Federal 450 f4.5	109.50	67.00	50.00
45C Federal 470 f4.5	129.50	82.50	60.00
45CL Federal 450CL f4.5	114.75	69.50	50.00
23D Fotolarger Merit f6.9	23.95	14.50	10.00
23D Fotolarger D69 f6.9	34.95	20.50	15.00
23D Fotolarger D45 f4.5	48.20	27.50	20.00
45D Fotolarger 1000DC545 f4.5	93.95	56.50	40.00
23C Solar 120	69.50	42.00	30.00
45D Solar 45D	86.50	49.00	35.00
57D Solar 57D	86.50	49.00	35.00

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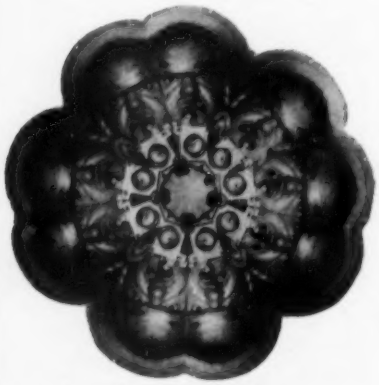
FRED RINGEL
New York, N. Y.

• *For the benefit of readers unable to see the Family of Man show in person, we present a 9-page feature beginning on page 80.*—ED.

Which Camera Has the Mirror?

Thank you for the February issue, which I call the best you have ever published.

But I think there was a slight error in it; namely, in the article *Weegee's Kaleidoscope*. On page 52 you state "Self



. . . through a looking glass

portrait by Weegee was made by placing mirror attachment over Speed Graphic lens." Sir! To me it looks a lot more like a Nikon.

KEN JENSEN
London, Canada

• *Confusion arises from the fact that the self portrait was made with a mirror attachment—not in a mirror. Weegee posed with his Nikon in hand and took the shot by using an extra-long cable release on his Speed Graphic, which was fitted with the mirror device.*—ED.

Hams & Spies: Radio License Copy OK

In the *Copying* story in the March issue there was a boxed item giving the Federal regulations which limit the kinds of material which may be copied. One sentence ran "*Verboten* are . . . 'ham' radio operators' licenses . . ."

The FCC regulations governing amateur radio service, Part 12, paragraph 12.25, are pretty clear:

". . . however, nothing in this section shall be construed to prohibit the photo-copying for other purposes of any amateur radio operator license."

Also, paragraph 12.68 says:

"The original license of each amateur station *or* a photocopy thereof shall be posted . . ." (italics mine)

The item in your story refers to "ham radio operators' licenses." The operator and station licenses are both on one side of a 3x5-in. piece of paper. They are not separate documents.

ROBERT HERTZBERG
Douglaston, N. Y.

• *A check with the local FCC office showed Mr. Hertzberg is right.*—ED.

Presenting...

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The Automatic Exakta VX with the latest creation by Carl Zeiss — the New glamorous f/2.0, Biotar 58-mm. lens with Automatic Diaphragm! This is another milestone in the uninterrupted progress of Exakta technique since this famous camera was designed two decades ago. The Automatic Exakta VX with Penta Prism eye-level viewfinder and Split-image Rangefinder and 58-mm., f/2.0 Automatic Zeiss Biotar Lens is priced at $392. Also available with waist-level finder. • The Automatic Exa has most of the advantages of 35-mm., automatic, single-lens, reflex photography in a camera foolproof enough for a child to use. The Automatic Exa is equipped with the 50-mm., f/2.8 Automatic Isco Westanar Lens. Automatic Exa with Isco Westanar f/2.8, 50-mm., Lens is priced at $129.50. Automatic Exa with Isco Westanar f/2.8, 50-mm., lens and Penta Prism, $159.50. Automatic Isco Westanar alone, $69.50. • Should you choose to make one of these cameras yours — you will have this assurance: In any company of cameras whether foreign or domestic, there is nothing to challenge the distinction of an Exakta or Exa.

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exposure meters
The Meters Most Photographers Use

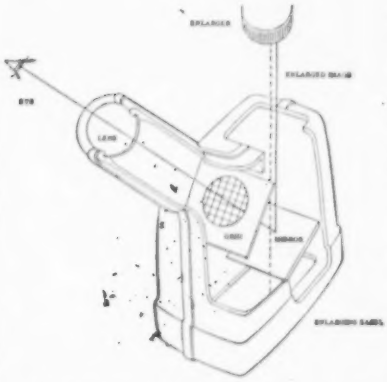
tools and techniques

by Norman C. Lipton

A round-up of recent developments and significant trends

B & L Focuser. An unusually designed enlarger focusing device that enables the darkroom worker to focus on the actual silver grains of the negative (as advocated by our indefatiguable associate Bob Schwalberg) is now being distributed to photographic supply outlets throughout the country by Bausch & Lomb. The substantially-built plastic instrument, which is priced at $6.50, makes use of a principle borrowed from aerial photography optics. The projected negative image is reflected directly into the user's eyes by a mirror, and the exact plane of critical focus is established in the viewing tube by a widely spaced grid that forces one's eye to "accommodate" or focus at that plane. The

Focusing device is used directly under center of enlarging lens: distance from mirror surface to grid is identical to that between mirror and easel surface.



distance from the mirror surface to the grid is identical (within thousandths of an inch) to that between the mirror and the enlarging easel—on which the instrument is placed for the focusing operation. There is no groundglass screen, as in other devices of this type, to scatter the light and obscure the outlines of the individual grain particles. In fact, the focused image seen in the tube of the B&L device is so bright that it can be easily demonstrated in a brightly lit room. The single limitation, if it is one at all, is the fact that the focuser must be placed directly under the center of the enlarging lens so that only the central areas of the negative image can be used to establish enlarger focus. Groundglass devices, on the other hand, can be used satisfactorily under all areas of the negative.

British Color Processing. The popularity of home-processing of color materials in Great Britain is reflected in the ever growing volume of how-to-do articles on the subject in the British weeklies and monthlies that cross our desk; also, in the new-product announcements and evaluations with which these overseas periodicals are honey-combed. Most recently, two new developing tanks have appeared on the British market with the spiral flanges at *both ends* made of a transparent plastic—the Polly-min and the latest model of the Paterson Universal Developing Tank. This feature permits reversal-type color roll films (such as our Ektachrome and Ansco Color materials) to be given their "second" or reversal exposure to white light without being removed from the reel. A test report on the new Paterson tank in the November 1954 issue of the British *Modern Camera Magazine* confirms the manufacturer's claim that this simplified second-exposure procedure will work. . . . More profound is an article in the November 5, 1954, issue of *The British Journal of Photography—A Universal Developing Method for European Color Negative Films*, by Dr. H. Gordon of Stockholm, Sweden. The study analyzes the similarity between the developing procedures and formulas for Agfacolor, Ferraniacolor, Gevacolor, and Telcolor negative films and concludes with a table listing formulas for (1) a universal developer for color negatives and (2) a universal bleach-fix bath which can be applied to all four materials. The latter replaces the separate bleach and fixing formulas prescribed by the respective color film manufacturers.

Fluorescent Lamp Dimming. A low-cost electrical device for controlling the intensity of as many as eight 40-watt rapid-start fluorescent lamps has recently been introduced by the Superior Electric Co., Bristol, Conn., under the trade name Luxtrol. It consists of a conventional incandescent-lamp control unit with a specially designed ballast that is easily installed in the lamp circuit with the aid of a simple wiring diagram supplied with each unit. The light intensity can be varied from complete darkness to full brightness at the turn of a calibrated dial without entailing warm-up and tube replacement problems associated with more elaborate fluorescent-lamp control systems. Priced at $30 per unit, Luxtrol should find ready application in studios and in establish-

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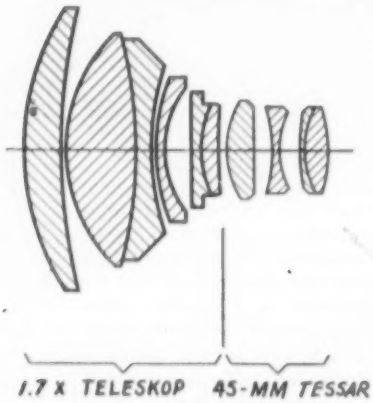
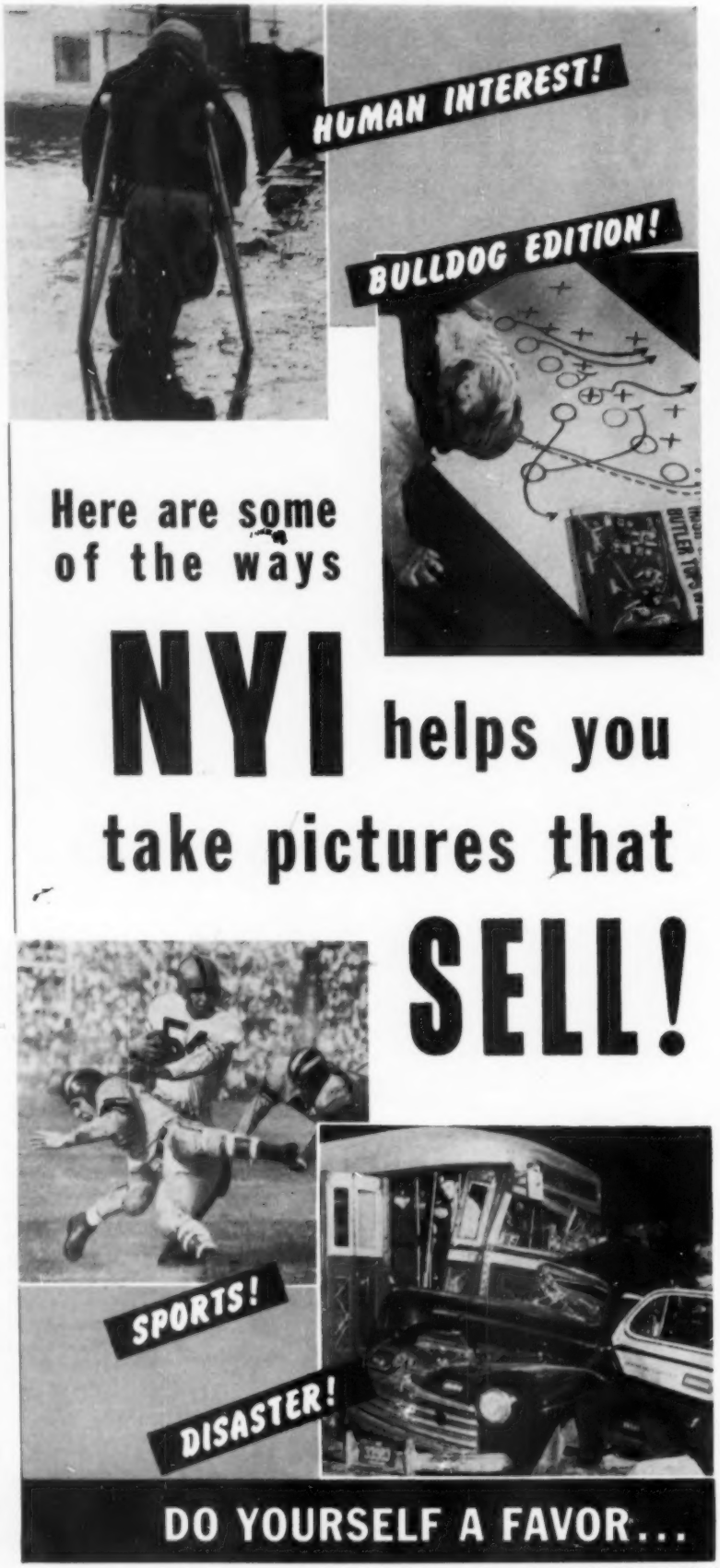
ments employing fluorescent light sources for the preparation of three-color separations and for intermediate negatives and positives in photomechanical reproduction.

Contaflex Tele Lens. A 6-element "Teleskop 1.7x" optical attachment has recently been announced by Carl Zeiss Inc., New York, for making 70 percent larger-than-normal negative images with their Contaflex single-lens reflex camera. The attachment fits in front of the nonremovable 45-mm, *f*/2.8 Tessar lens of the camera. It represents one of three recent expedients adopted by European camera manufacturers to provide a variety of image magnifications with a Compur-type

Six-element Teleskop attachment is bracketed to front of non-removable 45-mm Tessar lens of Zeiss Contaflex camera.



shutter. The first appeared in the Voigtlander Prominent camera which has a Synchro-Compur "behind-the-lens" shutter mounted within the camera body with a front flange to which various interchangeable lenses can be attached. The Kodak Retina III-c, on the other hand, has a Synchro-Compur shutter with a fixed lens element mounted behind it and a flange that takes either of three front-element combinations—a normal 50-mm unit, an 80-mm tele, or a 40-mm wide-angle. In the case of the Contaflex, we have what is claimed to be a fully corrected supplementary lens unit capable of giving satisfactory corner-to-corner image sharpness at all apertures from *f*/5.6 down. Plans for the Contaflex Tele Attachment were incorporated in the orig-



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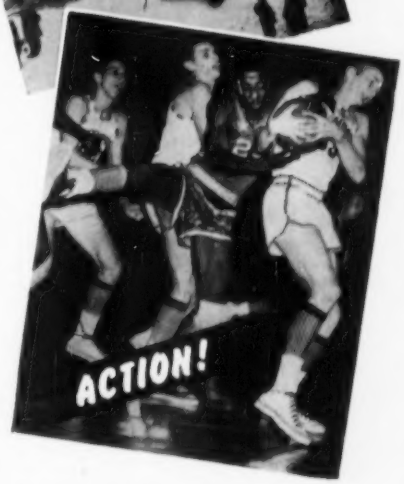
Henry C. Glesing Jr.

DIRECTOR OF PHOTOGRAPHY, THE INDIANAPOLIS TIMES
PRESIDENT AND A FOUNDER, INDIANAPOLIS PRESS PHOTOGRAPHER'S ASSOCIATION
MEMBER, NATIONAL PRESS PHOTOGRAPHER'S ASSOCIATION

This letter from Henry Glesing is additional proof that photography PLUS NYI training pays off in more money and in an exciting new career. NYI graduates are now in well-paid jobs, running their own studios, adding to their incomes with spare-time photography, or free-lancing on thrilling assignments. Most important of all, YOU can make the big money you've always dreamed about — not only in your own home town but in far-away places as well!



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inal design of this single-lens reflex camera, for there are grooves in the basic lens mount to hold the carrier of the tele mount. The Teleskop 1.7x attachment is another formerly impossible development made practical by modern lens-coating techniques; for in pre-coating times, its 8 glass-to-air surfaces would have involved serious internal-reflection and light-loss complications. The Zeiss people point out the fact that the brilliant Contaflex viewing screen is far better suited to the use of a telephoto attachment than single-lens reflex cameras with a full groundglass screen because the image is only ¼ as brilliant at f/5.6 as at f/2.8. Price of the 1.7x lens unit is $99.00, and the carrier, $11.00. The latter is also an integral part of a Contaflex Stereo Attachment as yet unavailable here.

Silver Recovery. Two recent papers on the recovery of silver from used hypo baths, one each from Ansco and Kodak, will dampen the get-rich-quick hopes of any large-scale darkroom operators or laboratory managers who might have been encouraged along that line by newly developed electrolytic equipment. However, there are other benefits to be had from an orderly recovery system. The Ansco article, *Silver Recovery from Exhausted Fixing Solutions* (*Ansconian*—Nov.-Dec. 1954) opens with a footnote advising readers that the Federal Government levies a tax of 50 percent of the net value of silver bullion transferred in quantities of 300 troy ounces or more within any 10-day period. It goes on to outline methods of chemical as well as electrolytic precipitation of silver, giving the significant details of each and pointing out their respective economic and technological advantages. The Kodak paper is a full-dress study of the subject by A. A. Rasch and J. I. Crabtree of their Research Laboratory. It is entitled *Electrolytic Recovery of Silver from Fixing Baths at Low Current Density*, and appeared in the February 1955 issue of *Photographic Science and Technique*. Here, in two servings, is the most useful set of data on fixing bath regeneration and silver recovery that has appeared in print in many years.

New Miracle Developers? Ever since Ilford Ltd. of London began marketing their patented developing agent Phenidone (1-phenyl-3-pyrazolidone), the photographic world has been wondering whether the compound was anything more than a more efficient non-toxic substitute for metol. Recent developments indicate that it is. Shortly after the first of the year, Ilford Ltd. announced a new Phenidone film developer called Microphen which produces twice the effective emulsion speed of Kodak D-76 with almost identical grain and gradation characteristics. Moreover, studies of the chemical's superadditivity characteristics by Kodak researcher T. H. James (*Mechanism of Superadditivity in Photographic Development—Photographic Science and Technique*, Nov. 1953) and of its Development rate under varying pH conditions, by T. H. James and W. Vanselow (*The Kinetics of Development by 1-Phenyl-3-Pyrazolidone—PS & T*, August 1954) showed vastly different behavior patterns between metol and the phenylpyrazolidones. A later Kodak paper by R. W. Henn and J. R. King (*Acceleration of Weak Agents by Combination with Phenylpyrazolidone—PS & T*, November 1954) suggests that, due to the accelerating action of the new Ilford reducing agent, substances like ascorbic acid, gallic acid, reductone, and hydrolyzed glucose may be used as developing agents in place of hydroquinone in combination with Phenidone. Of course, the ultimate decision will depend upon whether fog control, exhaustion capacity, and resistance to oxidation can be managed economically. In any event, the outbreak of a rash of new proprietary developing formulas appears to be a painfully real possibility in the near future. Let's hope that prospective developer manufacturers take a good long look at the economic factors involved before they plunge into the fray.

Photosensitive Aluminum. Template makers, plant photographers, and industrial designers who have been intrigued by the possibilities of the dimensionally stable photosensitive aluminum plates announced early in 1954 by Horizons, Inc. of Cleveland (now known as the Metalphoto Corp.—named after their product) now have a second material of this type to choose from. Late this past January, a somewhat more flexible photosensitive aluminum called Meta-Positive was introduced by the Anken Chemical & Film Corp., Newton, N. J. Metalphoto plates are printed by contact from ordinary line or continuous-tone negatives in a safelighted darkroom. Their photosensitivity is embodied in a surface layer of aluminum oxide 0.0005 inch thick on a rigid 0.020-inch support of metallic aluminum. Resolving power is claimed to be on the order of 1,000 lines per mm. Anken's Meta-Positive, on the other hand, is essentially a direct-positive material which can also be printed from negative originals—the latter by means of "black light" or green fluorescent tubes. No darkroom is needed for exposure or processing even though the speed of Meta-Positive is greater than that of regular autopositive materials (because of the high reflectivity of the metal). The base material is only 0.006 inch thick, and is supplied in rolls up to 32 inches wide and in any length.

Both Metalphoto and Meta-Positive are processed by successive immersions in a developer, water rinse, nonacid fixing bath, and a final wash. Two additional steps are recommended in the processing of Metalphoto—(1) a 5-minute bath in a gold chloride-thiocyanate toner like Agfa 231, followed by a water rinse to intensify the blackness of the image and (2) a 30-minute immersion in a boiling 20 percent solution of Glauber's salt (dessicated sodium sulfate) to seal the image permanently. As for prices: Metalphoto printed on one surface lists at $3.50 for a box of six 4x5-inch plates (or about 58 cents for a 20 square-inch area). Small quantities of Meta-Positive will retail in the neighborhood of $1 a square foot.

(*Continued on page* 151)

200 Years of Tradition

Today – the word TRADITION appears in many advertisements of the manufacturers of cameras and lenses. This is based upon the very important fact that good lenses cannot be built in a hurry. It takes generations of optical and precision experts.

VOIGTLÄNDER - the oldest name in Photography

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Today Voigtländer cameras are known the world over, and Voigtländer high-efficiency lenses are the perfect result of its centuries of experience and TRADITION.

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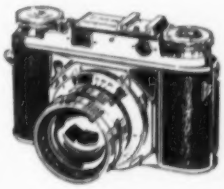
VOIGTLÄNDER PROMINENT 35 mm miniature camera. Synchro-Compur Shutter fully synchronized up to 1/500 sec. Range finder with Automatic Coincidence Compensation (patented).
Range of new interchangeable high-efficiency lenses:
the COLOR-SKOPAR f/3.5, the ULTRON f/2, the NOKTON f/1.5, wideangle SKOPARON f/3.5, telephoto lens DYNARON f/4.5

Prices: $ 157.50 with COLOR-SKOPAR f/3.5
$ 220.00 with ULTRON f/2
$ 270.00 with NOKTON f/1.5
$ 12.50 Eveready Carrying Case



Simple to operate, reasonably priced, a camera to overcome all photographic problems!

VOIGTLÄNDER VITESSA L 35 mm miniature camera with world-famous ULTRON f/2, Light-Value Compur Shutter and built-in exposure meter **realizes for the first time many revolutionary ideas in camera construction.**

Price: $ 159.50
$ 10.50 Eveready Carrying Case

Your local dealer will be glad to give you a demonstration

Voigtländer because the lens is so good

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Much of the fun in photography is in making your own enlargements. And you'll get more enjoyment from your darkroom activities with the finest instrument made for this purpose: Omega! Omega enlargers are available in a choice of models, designed to satisfy the most exacting requirements of every hobbyist and professional.

for negatives 35mm to 2¼" X 3¼"

Omega B-6	$109.50 Cash or $10.95 Down
Automega B-5	134.50 Cash or 13.45 Down

for negatives 35mm to 4" X 5"

Omega D-2 with Omegalite	164.40 Cash or 16.44 Down
Omega D-2 with Condensers	173.50 Cash or 17.35 Down
Omega D-2 with Colorhead	183.50 Cash or 18.35 Down
Automega D-3 w. Omegalite	197.50 Cash or 19.75 Down
Automega D-3 w. Conden's.	207.50 Cash or 20.75 Down
Automega D-3 w. Colorhead	217.50 Cash or 21.75 Down

for negatives 2¼" X 2¼" to 5" X 7"

Automega E-4 w. Conden's.	286.55 Cash or 28.65 Down
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Place your Omega order directly with DOWLING'S Fifth Avenue for immediate prepaid and insured shipment to any destination in the U. S. A. or abroad. Complete stock of Omega lenses and accessories.

Extraordinary NEW Omega 120 Camera

• Supersensitive, pin-point accurate rangefinder • Retractable pressure plate for unvarying film flatness • New steady-grip design and oversized controls for touch-system operation • Automatic parallax compensating viewfinder • Automatic resetting action • 9 crisp 2¼" X 2¼" negatives on economical 120 roll film. With Omicron coated f/3.5 lens in Rapax X synch shutter **$239.50 Cash or $23.95 Down**; or with Omicron coated f/3.5 lens in Rapax full synch' shutter **$258.50 Cash or $25.85 Down.**

Selected Omega 120 Camera Accessories

6-shot Omegaflash	$49.50
Leather Compartment Case	32.50
Aluminium Carry-all Case	69.50

Shoot flash the modern way:

The MIGHTY LIGHT way!

Forget—forever—costly, clumsy flash bulbs!

Both 1955 MIGHTY LIGHT models are ultra-compact, inexpensive Speedlights . . . packing a "mighty" punch! Flash tube is rated for 100,000 flashes of 1/1000th sec. duration. The Battery Pack is about the size of 2 packs of playing cards (put end to end) and weighs just a little over a pound. It swings from your shoulder, or fits the base of your camera, with an accessory Battery Pack Holder ($4.95.) MIGHTY LIGHT STANDARD units have a Flash Head only 7" high, no thicker than a broom stick. Guide number is 160 for medium speed black and white film; 30 for Kodachrome. Batteries rated 2,000 flashes. MIGHTY LIGHT DELUXE units have a Flash Head just 4" longer than the standard units; and the overall weight is just 4 ozs. more; batteries are rated for 1,000 flashes. Light intensity with MIGHTY LIGHT DELUXE is, of course, substantially greater: One full f/ stop. Guide number for medium speed black and white film is 220; for Kodachrome — 45.

MIGHTY LIGHT Standard AC Unit	$54.95 Cash or $5.49 Down
MIGHTY LIGHT Standard BATTERY unit with batteries	69.95 Cash or 6.99 Down
MIGHTY LIGHT Standard COMBINATION unit (AC, Battery Pack, Rejuvenator)	89.95 Cash or 8.99 Down
MIGHTY LIGHT DELUXE AC Unit	69.95 Cash or 6.99 Down
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MIGHTY LIGHT DELUXE COMBINATION unit (AC, Battery Pack, Rejuvenator)	104.95 Cash or 10.49 Down

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Inquire also about MIGHTY LIGHT Slave Units!

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Cine-Voice, Single Lens Model, **$695. Cash or $69.50 Down;**
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Auricon-Pro, 200' capacity, **$1310. Cash or $131. Down;**
Auricon Super-1200, 1200' capacity, **$4652.15 Cash or $465.21 Down.**

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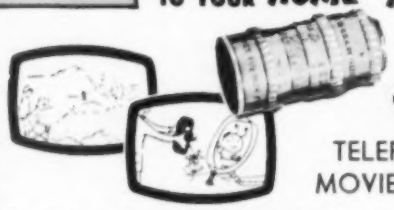
Add THAT DISTANT DETAIL . . . THAT EXCITING CLOSE-UP . . . TO YOUR **HOME MOVIES** with **Elgeet**



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Far-off vistas, fast sports action, candid close-ups are all captured clearly and brilliantly with hard-coated, color-corrected Elgeet telephoto lenses. And there is an Elgeet lens designed for **your** camera, priced for **your** movie budget.

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75mm (3") f/2.9, Focusing	$63.45 Cash or $6.34 Down
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- **Unique Eveready Case:** Holds ALPA with wide angle, 50, 75 or 90mm lens; **plus** sunshade, filters and exposure meter.

• *Your Choice of Lens Determines Price of Camera* •	ALPA 5 (Prism Reflex)	10% Down	ALPA 7 (Prism Reflex & Range-finder)	10% Down
Old Delft Alfinon 50mm coated f/2.8	$309.00	$30.90	$349.00	$34.90
Schneider Xenon 50mm coated f/1.9 with FULLY automatic diaphragm	389.00	38.90	429.00	42.90
Kern Switar 50mm coated f/1.8 APOCHROMAT	419.00	41.90	459.00	45.90

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Old Delft Algular 135mm coated f/3.2 lens	139.00
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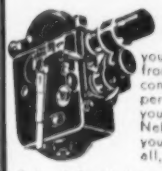

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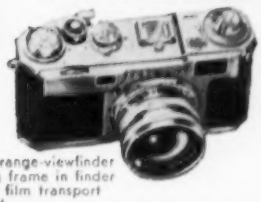

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- Life-size, combined range-viewfinder
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- 12 shutter speeds from 1 sec. to 1/1000th sec., plus time and bulb
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NIKON S-2 with famous Nikkor coated f/2.0 lens **$299.50 Cash or $29.95 Down**; or with famous and ultra-fast Nikkor coated f/1.4 lens **$345. Cash or $34.50 Down.** Eveready carrying case **$10.50.**

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28mm f/3.5	$149.50 Cash or $14.95 Down
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Single-window for rangefinder and viewfinder, metal focal plane shutter, removable back, bayonet lens mount, delayed action release, full built-in flash synchronization are just a few of the reasons for the acknowledged leadership of CONTAX! Contax II-A with Tessar coated f/3.5 lens **$261. Cash or $26.10 Down**; with Sonnar coated f/2.0 lens **$345. Cash or $34.50 Down**; or with Sonnar coated f/1.5 lens **$374. Cash or $37.40 Down.** For Contax III-A (with built-in exposure meter) add **$38. Cash or $3.80 Down.**

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Biogon 35mm f/2.8	183.00 Cash or 18.30 Down
Planar 35mm f/3.5	102.00 Cash or 10.20 Down
Triotar 85mm f/4.0	106.00 Cash or 10.60 Down
Sonnar 85mm f/2.0	229.00 Cash or 22.90 Down
Sonnar 135mm f/4.0	146.00 Cash or 14.60 Down
Stereotar C, 35mm f/3.5's	159.00 Cash or 15.90 Down
Stereo Prism Attachment	37.00 Cash or 3.70 Down
Stereo Viewfinder	10.00 Cash or 1.00 Down

1955 ▲ IKOFLEX

Ikoflex I-A with Novar coated f/3.5 lens in Prontor full synch' shutter **$76. Cash or $7.60 Down; Ikoflex I-A** with Tessar coated f/3.5 lens in Prontor full synch' shutter **$96. Cash or $9.60 Down;** and the superlative **Automatic Ikoflex II-A** with Tessar coated f/3.5 lens in Synchro-Compur MX shutter **$126. Cash or $12.60 Down.**

1955 CONTAFLEX

The gem of all 35mm Single Lens Reflex cameras! Ground-glass eye-level "focusing" is combined with split image rangefinder. Superb Tessar 45mm coated f/2.8 lens, with Synchro-Compur MX shutter, and **fully** automatic diaphragm. Unsurpassed value at only **$169. Cash or $16.90 Down.**

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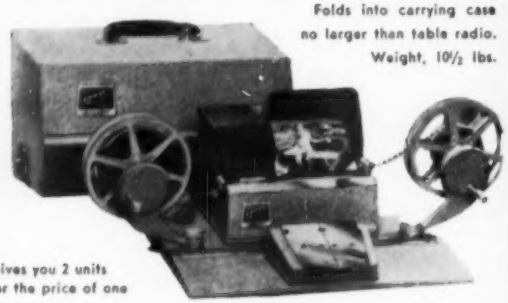
CRAIG PROJECTO-EDITOR

Folds into carrying case no larger than table radio. Weight, 10½ lbs.



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NEW COMBINATION TABLE-TOP MOVIE VIEWER AND COMPLETE EDITOR — Large (3¼ x 4¼ in.) brilliant screen shows action movies without darkening room. Ideal size for family groups. Create slow or fast motion effects by varying speed of take-up reel. Re-run scenes without waiting for end of reel. Stop film to examine individual frames with complete safety to film. Built-in frame marker, splicer and film cement give quick way to cut out poor sections — repair film — arrange movies in story-telling sequence. Has ground and polished condenser lens, straight-through film threading, rotating optical prism shutter and flat field projection lens. Complete with carrying case, 8 mm. or 16 mm. model, **$79.50 Cash or $7.95 DOWN**

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with the new "million prism" reflectors

New 1955 DB-SM-I Synctron Dry Battery Unit

- Conservative color **guide number** of 45; fast black and white—220.
- **New** high-efficiency **GE118 flash tube.**
- **Light output**—2650 lumen seconds.
- **Weight**—only 5 lbs.
- **Size**—only 8½" X 2¼" X 6½".
- **Recycling time**—5 to 8 seconds.
- **Flash duration**—1/2000th second.
- **Batteries**—expectancy of 500 flashes; replacement cost only $4.25!

Complete price, including cord and batteries . . .
$115.95 Cash or only $11.59 DOWN

Other Powerful Dormitzer Synctron Units

Model 100—Professional	$237.00 Cash or $23.70 Down
Model 200—Super Pro	304.75 Cash or 30.47 Down
Model 207—Amateur	140.00 Cash or 14.00 Down
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Model 215—Economy (A.C. only)	725.00 Cash or 72.50 Down
Model 223—Studio Light	495.00 Cash or 49.50 Down

(Prices indicated include battery and charger, except of course with A.C. Model 215.)
FREE Dormitzer Synctron brochure is yours simply by writing to DOWLING'S Fifth Avenue!

UHLER Cine Printers

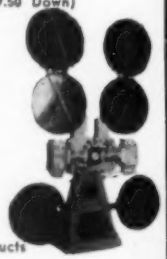
. . . the standard of perfection!

Uhler 16mm Sound Cine Printer! (illustrated)

Makes contact prints of both sound and silent pictures in black and white or color. Prints picture and sound at the same time. 400' capacity; beautiful precision finish. Copies of all your favorite films can be made at about one-quarter the cost of the original. It's easy and lots of fun to make your own prints at home. Titles may be made with double exposed motion background as shown in theatres. Complete instructions are furnished with each machine.

$125. Cash or $12.50 Down
◄ (Uhler 16mm Silent Cine Printer **$95. Cash or $9.50 Down)**

Uhler Combination 8mm and 16mm Continuous Printer ► (illustrated)



For professional or amateur movie makers, laboratories, schools and technicians—where the highest quality prints are required. Black and white or color; single or double system sound — film is run through the machine once only. 1200' capacity. Printing speed up to 1600' per hour. Lamps are air-cooled. Built-in filter holder for color film printing.

$685. Cash or $68.50 Down

Other Uhler Precision Cine Products

Combination 35mm Continuous Printer for Sound or Silent Pictures (capacity — 6-1200' feed and take-up discs)	$1145.00 Cash or $114.50 Down
Reduction and Enlarging Printer for 8mm and 16mm (1200' capacity)	1056.88 Cash or 105.68 Down
Reduction and Enlarging Printer for 16mm and 35mm (capacity — 4-1200' feed and take-up discs)	2475.00 Cash or 247.50 Down

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new 1955 Diax IIa

The low priced 35mm PRECISION Camera with COUPLED Rangefinder and INTERCHANGEABLE coated Lenses by SCHNEIDER, Germany!

- Handsome, modern design; rugged construction; extreme compactness—4½" X 3" X 3"—only 21 ozs. in weight!
- Equipped with high-quality SYNCHRO-COMPUR MX fully synchronized shutter, with Bulb, Time and speeds from 1 sec. to 1/500th sec. Built-in selftimer.

DIAX IIa with Isconar 50mm f/3.5	$ 99.50 Cash or $ 9.95 Down
DIAX IIa with Xenar 50mm f/2.8	129.50 Cash or 12.95 Down
DIAX IIa with Xenon 50mm f/2.0	149.50 Cash or 14.95 Down

Accessory Lenses for DIAX IIa

Xenagon 35mm (wide angle) f/3.5	$ 69.70 Cash or $ 6.97 Down
Isconar 85mm (telephoto) f/4.5	49.70 Cash or 4.97 Down
Tele-Xenar 90mm (telephoto) f/3.5	89.90 Cash or 8.99 Down
Tele-Xenar 135mm (telephoto) f/4.0	89.90 Cash or 8.99 Down

FREE illustrated DIAX IIa brochure on request, or place your order directly with DOWLING'S Fifth Avenue **today!**

1965* AUTOMATIC Exakta VX

*Yes, 1965! This is not a typographical error. It is a way of emphasizing the important giant steps forward taken by the new AUTOMATIC EXAKTA VX. Previous Exakta VX models (now usually described as "discontinued") were fine instruments. But now—almost all at once—Exakta photography has grown 10 years with the advent of the **new**, superb 1955 AUTOMATIC EXAKTA VX. Here are a few of its distinctive up-to-the-minute features . . .

• New safe, positive film advance • Improved shutter cocking mechanism • New exposure counter • Redesigned, easy operating, rewind • New shutter lock to prevent accidental exposures • New shutter mechanism • And—above all—a series of amazing new AUTOMATIC lenses: **One** pressure of the release button automatically closes down the lens diaphragm to a preset aperture and releases the shutter at the same time!

AUTOMATIC EXAKTA VX with automatic coated 50mm lens indicated below	Waist-level viewfinder Total	Waist-level viewfinder 10% Down	Split-image Pentaprism Total	Split-image Pentaprism 10% Down
f/2.8 Isco Westanar	$239.50	$23.95	$296.50	$29.65
f/2.0 Isco Westagon	279.50	27.95	336.50	33.65
f/2.0 Zeiss Biotar (illus.)	345.00	34.50	392.00	39.20
f/1.9 Schneider Xenon	341.70	34.17	398.70	39.87

Streamlined, pocket-size version of Exakta

SPECIAL LIMITED OFFER—EXA COMBINATION OUTFIT AT A $30. SAVING! Exa camera with 50mm f/2.8 Isco Westar lens, 105mm f/4.5 telephoto lens, BC flashgun, and leather eveready camera case (regularly $159.40) at special complete price **$129.40 Cash or $12.94 Down!**

Exakta 66 Unsurpassed

2¼ X 2¼ single-lens, reflex
Complete with 80mm Zeiss Tessar coated f/2.8 lens in preset diaphragm **$319.50 Cash or $31.95 Down.**

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star-D

Conquest

Elevating Tripod

Here is truly elegance in action . . .

The new Conquest is a masterpiece of design. It has more to offer than you ever expect from a tripod. Constructed with care and impeccable craftsmanship, here are some of its outstanding features:

- Nylon gears and guides. Never needs oil. Never slips or drops. Moves up or down only as you turn crank.
- Patented Multi-cam platform, exclusive on star-D tripods, removes easily and quickly gives you a base specifically designed either for a larger or a miniature camera.
- Lightweight, sturdy and rigid.
- The only tripod with a Lifetime Guarantee. The star-D is a rare case of the best actually costing less!

only $19.95 (complete cash price!)

Wherever you live, DOWLING'S Fifth Avenue will ship your Davidson star-D tripod to you with postage and insurance prepaid!

In addition to the elevating CONQUEST, there are other fine **star-D** tripods for virtually every use—every camera . . .

Model D-17 (2 section; extends 60"; closes 33")	$13.75
Model D-18 (3 section; extends 58"; closes 25½")	15.40
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1955 Konica II

One of the Proudest Photographic and Optical Achievements of Postwar Japan!

This exceptional camera performs like a great symphony orchestra. Its splendid design is such that each component part is just "right." And the result is a smoothly performing whole instrument, fully responsive to any photographic task to which it may be assigned . . .

- All controls are visible from the top—operating position
- Single-window range-view finder, with an image unique for size, clarity and brilliance
- World-famous Konirapid-S shutter with nine speeds from 1 sec. to 1/500th sec.
- Built-in flash synchronization
- Brilliant 5-element Hexanon coated f/2.8 lens
- Above all, here is a camera that handles and "feels" just as it should!

NOW only $89.75 Cash or $8.97 DOWN!

Leather eveready case for KONICA II	$9.75
Autoup (20" to 40")	9.00
Sunshade	1.75

It "pays" to order your new KONICA II **directly** from DOWLING'S Fifth Avenue. Your order will be expertly packed for shipment, with safe arrival guaranteed. Take advantage of our famous Air Service, if time is short. Chances are this will make your new KONICA II not more than a day away—whether you live in Tacoma or Tallahassee! Yes, we are usually "closer" than a local store. Most important: We have it in stock; and your purchase is backed by our unconditional guarantee of satisfaction, or your money back within 30 days. Always shop the **easy** way—the D. F. A. way—by mail! It's a **good** habit!

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Hi-fi enthusiasts! Write D. F. A. for **free** brochure on Pentron low cost **high fidelity** tape components for portable use and custom installations!

Now YOU can ADD SOUND to your silent movies at an amazingly low price!

CINESONE
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For the first time at a sensible price, you can make your silent films — both black and white and color — come to glorious life . . . adding music, dialogue or commentary that challenges the finest professional talkies for quality. No need to buy a projector. Cinesone fits all 8mm and 16mm projectors — silent or optical sound.

Cinesone Model A includes adapter, and lead wires ready for plugging into Revere, TDC or Masco tape recorders ..... $ 99.75 Cash or $ 9.97 DOWN
Cinesone Model PA includes adapter and pre-amplifier (for use with Pentron or any recorder, optical sound projector, TV or radio set, amplifier etc.) ..... 155.00 Cash or 15.50 DOWN
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Our FREE booklet gives you full information about Cinesone — "Your Soundest Investment In Home Movie Making!"

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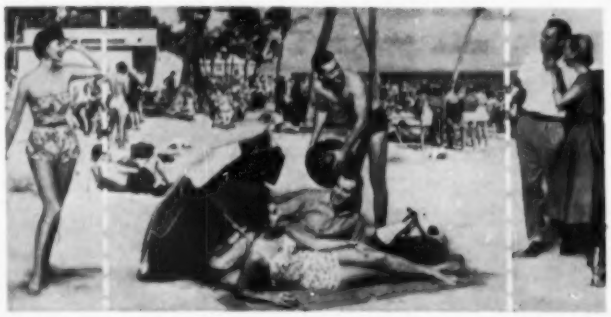
VISTASCOPE
Now! Full Dimensional Realism in Your Home Movies!

The wide screen — Cinemascope etc. — has become an accepted addition to all moviegoers. Now VISTASCOPE brings home movie makers the most significant development since the advent of color. You will bring right into your own living room the same kind of spectacular anamorphic pictures that you are seeing in theatres!

In shooting you now have a 36 degree lens angle — giving your movies 50% more width than formerly, without decreasing height! There are no color errors or visible linear distortion, unlike movies filmed with ordinary wide angle lenses or previously marketed cylindrical anamorphic lenses. It's possible to put 50% more view on the same area of film, with this new anamorphic or "squeeze" system. In a sense, it's as if a $100. bill should suddenly be worth $150.!

Your present home movie outfit needs only one VISTASCOPE. One Vistascope lens is used on both your camera **and** projector. You load your camera with standard film, and process it in the usual way. Use your camera and projector as you would normally. No technical experience is necessary. Moreover, you'll take more beautiful movies than you believed possible because with Vistascope you **cannot** take distorted home movies!



VISTASCOPE Lens for 8mm Camera and Projector.
$ 75. Cash or only $ 7.50 Down
VISTASCOPE Lens for 16mm Camera and Projector.
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NOW . . . 50% more with VISTA-SCOPE

• The Movie Format of Yesterday •

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Leica M-3 w/ Elmar coated f/3.5 lens $348. Cash or $34.80 Down
Leica M-3 w/ Summicron coated f/2.0 lens 447. Cash or 44.70 Down
Leica M-3 w/ Summarit coated f/1.5 lens 468. Cash or 46.80 Down
Leica M-3 Body without lens 288. Cash or 28.80 Down

LEICA M-3 ACCESSORIES

Summaron-M coated 35mm f/3.5 lens	$ 99.00 Cash or	$ 9.90 Down
Elmar-M coated 90mm f/4.0 lens (standard mt.)	93.00 Cash or	9.30 Down
Elmar-M coated 90mm f/4.0 lens (collapsible)	150.00 Cash or	15.00 Down
Hektor-M coated 135mm f/4.5 lens	141.00 Cash or	14.00 Down
Leica Meter-M	30.00 Cash or	3.00 Down
Adapter, standard Leica lenses to M-3	10.50 Cash or	1.05 Down

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Valoy II Enlarger	96.00 Cash or	9.60 Down
Leica IIf with Elmar coated f/3.5 lens	$177.00 Cash or	$17.70 Down
Leica IIf with Summaron coated f/3.5 lens	216.00 Cash or	21.60 Down
Leica IIIf with Elmar coated f/3.5 lens	237.00 Cash or	23.70 Down
Leica IIIf with Summaron coated f/3.5 lens	276.00 Cash or	27.60 Down
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Leica IIIf with Summarit coated f/1.5 lens	357.00 Cash or	35.70 Down

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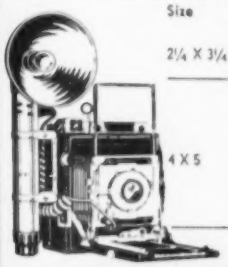
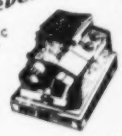
All brand new, latest models, with factory guarantee! Includes: • Graflok back • Ektalite screen • new Graphic coupled rangefinder with Rangelite and automatic parallax viewfinder • new full image wire finder • Graflite 3 cell flash gun • deluxe case • film pack adapter or roll film holder • 6 cut film holders • adapter ring • sunshade • 4 filters. Prices below include all this extra equipment! Easy payments available!



Size	Coated Lens in Shutter	Speed Graphic	Crown Graphic
2¼ X 3¼	101mm Ektar f/4.5 (1/800 sec.)	$308.	$273.
	105mm Tessar f/3.5	323.	279.
	105mm Ektar f/3.7	312.	268.
4 X 5	135mm Schneider Xenar f/4.7	307.	265.
	135mm Optar f/4.7	322.	278.
	127mm Ektar f/4.7	322.	278.
	135mm Tessar f/4.5	337.	297.
	150mm Schneider Xenar f/2.8	347.	304.
	150mm Tessar f/4.5	347.	304.
	152mm Ektar f/4.5	338.	298.
	135mm Schneider Xenar f/3.8	353.	313.
	150mm Tessar f/3.5	408.	364.
	150mm Schneider Xenotar f/2.8	$17.	477.

New Graphic rangefinder is manufactured for 4 X 5 cameras only. 2¼ X 3¼ outfits are supplied with Kalart coupled rangefinder.

New 1955 Revere 800



Automatic Projector

Runs by itself!

You sit apart from the projector and enjoy the show! Wollensak 5" f/3.5 lens, 500 watt lamp, built-in fader, and case $119.50 Cash or $11.95 Down.

1955 MINOX III-S

Fabulous! Weighs 2½ ozs.; 3" long. Automatic transport takes 50-exposure film. Built-in flash; 9 speeds to 1/1000th sec.; sharp f/3.5 lens. With case and chain $139.50 Cash or $13.95 Down. Accessory reflex finder $27.50; right-angle finder $14.95.

1955 GRAPHIC 35

Just Out!

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new 1955 Voigtländer VITESSA

With famous automatic picture mechanism! Standard Model with Color-Skopar coated f/3.5 lens $99.50 Cash or $9.95 Down; Model "L" with light value scale and built-in exposure meter, plus Ultron coated f/2.0 lens $159.50 Cash or $15.95 Down.

ALL NEW 1955 RETINA IIIc

Built-in exposure meter and with normal Xenon coated f/2.0 lens in M-X shutter — $185. Cash or $18.50 Down. Optional: Curtar 35mm coated f/5.6 wide angle lens $62.50 Cash or $6.25 Down; Longar 80mm coated f/4.0 telephoto lens $82.50 Cash or $8.25 Down.

new 1955 BESELER Enlargers

Takes negatives from 16mm to 4 X 5 without changing condensers! Has automatic electric motor. 4 X 5 Model $189.75 Cash or $18.97 Down; 5 X 7 Model $239.75 Cash or $23.97 Down.

1955 Linhof Super Technika Cameras

4 X 5 model with multi-focus rangefinder, universal back and 150mm Xenar coated f/4.5 lens $419.70 Cash or $41.97 Down. Linhof 2¼ X 3¼ outfit with multifocus rangefinder and 3 lenses complete $564.15 Cash or $56.41 Down.

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Picture in a minute! Sensational NEW Polaroid Highlander $69.95 Cash or $6.95 Down. Speedliner $89.75 Cash or $8.97 Down. Deluxe Pathfinder with coupled rangefinder $249.50 Cash or $24.95 Down.

1955 HASSELBLAD Model "1000-F"

—superlative 2¼ X 2¼ single lens reflex with crisp Ektar coated f/2.8 and speeds to 1/1000th sec.: $379.50 Cash or $37.95 Down. NEW Super-wide Model with 38mm Zeiss Biogon coated f/4.5 lens $489.50 Cash or $48.95 Down.

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Rolleiflex with Xenar f/3.5 $217.50 Cash or $21.75 Down; or with Tessar f/3.5 $232.50 Cash or $23.25 Down. Rolleiflex 2.8C, either Xenotar f/2.8 or Zeiss Planar f/2.8 $291.50 Cash or $29.15 Down. Rolleicord V with Xenar f/3.5 $134.55 Cash or $13.45 Down.

1955 HERMES Rocket Typewriter

World's lightest (only 8 lbs.), yet the best! Keyboards available in over 70 languages. Built to "take it" by Bolex camera people. Perfect for servicemen, travelers and you! Including case, only $73.67 Cash or $7.36 Down.

Complete 1955 Keystone 5-Unit Movie Outfit

Top-quality Olympic 8mm turret camera with normal f/2.5 lens, Kinotar wide angle f/2.5 lens, Kinotel telephoto f/3.5 lens, latest Brockway M-3 exposure meter, plus roll 8mm Kodachrome film. Complete $139.50 Cash or $13.95 Down.

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Argus C-3, ctd. 3.5, like new, flashgun, case	37.50
Edinex, ctd. Xenon F.2, Compur Rapid Synch., l.n.	39.50
Clarus MS-35, ctd. Wollensak 2.8, Synch., l.n.	39.50
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Robot II, ctd. Xenon 1.9, Synchro, like new	49.50
Kodak Stereo, ctd. 3.5, Synchro, like new	59.50
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Same, ctd. Summicron F.2, like new	179.50
Same, ctd. Summarit 1.5, like new	189.50
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Same, ctd. Summarit 1.5, like new	219.50
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Nicca III-S, ctd. 3.5, Synch., l. n.	129.50
Canon II-S, ctd. Serenar 1.8, Synch., l.n.	145.00
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Ctd. Summaron 3.5, 35mm, chrome, like new	64.50
Ctd. Summaron 3.5, 35mm f. M-3, chr., l.n.	75.00
Ctd. Serenar 2.8, 35mm, chrome, like new	67.50
Ctd. Elmar 3.5, 50mm, chrome, like new	35.00
Leitz Summar F.2, 50mm, chrome, like new	35.00
Ctd. Summicron F.2, 50mm, chrome, like new	109.50
Ctd. Summarit 1.5, 50mm, chrome, like new	119.50
Ctd. Serenar 1.9, 85mm, chrome, like new	89.50
Ctd. Elmar F.4, 90mm, chrome, like new	62.50
Ctd. Angenieux 1.8, 90mm, like new	99.50
Leitz Imar, l.n., $26.50; Towe "Zoom," N.	26.50
Leica Cassettes, all-metal, like new, ea.	2.25

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Ciroflex D, ctd. 3.5, Alphax Synch., l.n.	$ 39.50
Stand. Rolleiflex, crank-oper., Tess. 3.8, l.n.	45.00
Same, ctd. Tessar 3.5, Comp. Rapid, Synch., l.n.	55.00
Exakta B, 127 size, Tess. 2.8, Syn., Selft., l.n.	49.50
2¼x3¼ Graflex B, ctd. Ek. 4.5, Syn., l. n.	55.00
Ikoflex IA, T-ctd. Tess. 3.5, Synchro, l.n.	69.50
Rolleicord III, ctd. Xenar 3.5, X Synch., l.n.	69.50
Rolleicord IV, ctd. Xen. 3.5, MX Synch., NEW	87.50
Auto-Roller, ctd. Tessar 3.5, MX Synch., l. n.	145.00
Same, 1955 Model, ctd. Tessar 3.5, MX, used	185.00

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Super Ikonta A, T-ctd. Tessar 3.5, like new	45.00
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stereo today

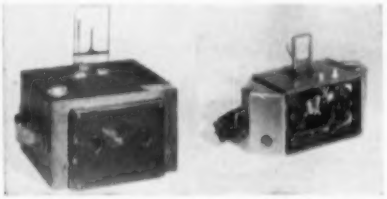
by Robert L. McIntyre

Man Behind the Boom

Most of us think of new cameras as creations of the research laboratories, where men with slide rules work them out at drawing boards long before they see the light of day.

The camera that started our modern stereo boom didn't begin that way. It was created by an engineer, but not a camera engineer. He was an amateur photographer with a basement workshop in his home, then in Milwaukee. His name is Seton Rochwite.

Rochwite built his first stereo camera in 1930. It was made up, essentially, of parts from a pair of Kodak box cameras. It took adequate pictures in black-and-white. Better cameras of American and German manufacture could be purchased at that time. Rochwite elected to make his own, probably as much for the fun of designing and building it as for enjoying its use later on. His second camera, built in 1932, was of all-metal construction and used a pair of 50-mm Certar f/4.5 lenses in Vario shutters with interlocked focusing and aperture adjustments. Neither of these cameras was particularly significant in itself. The self-assigned task



Models built in 1930 (left) and 1932.

of designing and building them gave Rochwite the experience and confidence to go ahead when the time was right for a third experiment.

When Kodachrome was introduced in 1935, Rochwite was quick to visualize its significance in connection with stereo. Here was a natural—a chance to combine the inherent realism of color with stereo's built-in depth effect. He assumed that the big camera manufacturers would see it the same way. Thinking of himself as an amateur camera user rather than a professional camera designer, he waited for them to bring out the ideal stereo outfit—a camera designed to use 35-mm Kodachrome. Nothing happened!

Nothing kept on happening. Letters to manufacturers brought no encouraging news. Rochwite finally decided that, if he wanted his dream camera, he would have to build it himself. He started shopping around for a pair of used cameras to provide parts and lenses, meanwhile wondering what would be the best picture size to use. The combination he came up with is the standard of the stereo field today. He selected a pair of Univex Mercury cameras with 35-mm Wollensak Tricor f/3.5 lenses that had been worth $25 each, new, in 1938. That's where the 35-mm focal length of modern stereo camera lenses comes from. He chose the 5-perforation-wide picture on 35-mm film as a most economical size, one his lenses would cover well, and a most convenient size for which to design a stereo film transport system. That's the source of the present stereo-picture format.

The camera was finished in 1940, along with its companion viewer. Rochwite's first slides had to be mounted for viewing, and the most convenient glass for him to use came in 3¼x4-inch lantern-slide plates. Cutting one in half gave him two pieces 1⅝x4 inches, which is the over-all size of today's standard stereo mount. Thus most of the basic elements of modern stereo evolved, not in a big research laboratory, but in an amateur's home workshop. The David White Company of

First 35-mm camera, with viewer.

Milwaukee became interested, but the war intervened and it was not until 1947 that Rochwite's camera was placed on the market as the Stereo Realist, which started the modern stereo boom. By that time it had undergone many changes and refinements, but the basic stereo system remained the same.

Like many an amateur picture taker, Rochwite had turned professional as a stereo-camera designer. His next project was assigned by Kin-Dar Corporation of South Milwaukee—to design a camera that would take good stereo pictures with a minimum of effort and could be made to sell for less than $100. The Kin-Dar camera, with a $99.50 price tag, was the result. It retains some unusual features similar to those of the Realist, like a left-hand shutter-release button and viewfinder window placed at the bottom of the camera box. Other details are entirely different—it is focused by a large knob at top center of the camera, which moves the lensboard in and out instead of shifting the film within the camera. A single window at the back of the camera serves the dual purpose of rangefinder and viewfinder.

The new Kin-Dar.

About two and a half years of work went into the Kin-Dar design, and the camera was first displayed last spring. Shipments to dealers began early in 1955. According to Arch Brewer, vice-president and general manager, quantities now are limited but the company expects production to pass 100 cameras per day by the middle of the year.—

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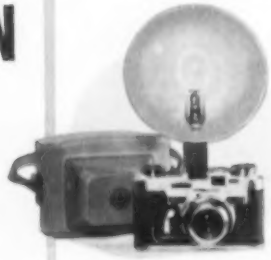

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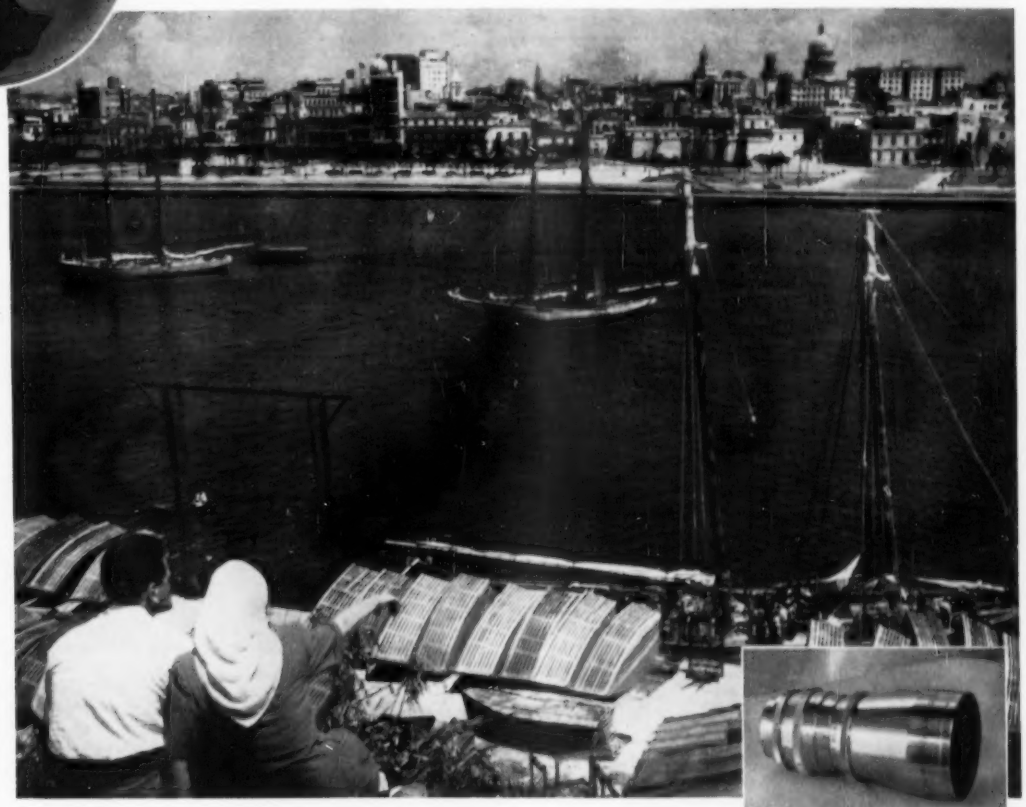

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camera clubs

by Whit Hillyer

Well, Pull Up a Chair . . .

Some time ago, *Schenectady Photographic Society* ran a "gripe" contest for members, offering a year's free dues to the winning entrant. No, the idea was not to see how apoplectic you can get, but rather to come up with some constructive criticism, some really thoughtful reactions.

The winning entry, written by Dudley Blake, has been sent to me for perusal. This month I'm moved to give you excerpts from it. I honestly think that more camera club officers would do well to request information of this kind, by way of knowing how the club is going and what may need attention. In reading Mr. Blake's words which follow, please remember that his expressed opinions do not necessarily coincide with my own, with those of the POP PHOTO staff, or even with those of his *Schenectady* colleagues. This is simply some thought-provoking material which I hope will touch off some discussion within your group. Now, here's Blake:

". . . To say that a picture must be 16 x 20 or 11 x 14 is to ignore the fact that some pictures are best printed small. . . . Let's use print size and shape creatively, and not as an inflexible rule. . . .

"I am disturbed by technique for technique's sake. Where this viewpoint dominates, a photograph will be judged not on what it communicates to the viewer but instead by stereotyped, predetermined standards, such as the S-curve, horizon lines not dividing a picture in half, and so on. . . . This reliance on making photographs by formula may result in technically excellent pictures, but it can produce dull, trite, and unimaginative ones as well. I do not mean that we should abandon all standards—but we should use them only when they help us to say what we want to say.

"I would not suggest for a moment that we go back to the horse-and-buggy days of photography, and trade in our excellent modern equipment for something primitive. However, technical advantages are far ahead of our perceptive use of them. Edward Steichen has said, 'No photographer has ever equalled the simplest camera.' The incessant talk about *f*-stops, exposure indices, and filters has made us forget that such things are really only a means toward an end. . . . I do not mean that we should ignore technique. Certainly we have to master it in order to communicate what we see. A poor print, regardless of its message, does not adequately tell us what it says. Good technique *always* adds to the effectiveness of a photograph, poor technique always detracts. . . .

"Every photographer is a unique personality. His background, environment, and sensitivity to the world around him make him unlike any other person. Why then shouldn't his pictures reflect this uniqueness? . . . We photograph with our eyes, our minds, and our hearts, as well as with camera and film. Let us use technique, not let it use us."

As stated previously, the foregoing opinions do not necessarily coincide with my own—but they make such good sense that I hasten to admit there's some coinciding at that!

Exchange Salon Data Wanted

Woodlawn Camera Club, San Antonio, Tex., wants to correspond with any club having a print show for exchange. They'd like to get your club bulletin, too. Write to Mrs. George Beaury, 1532 W. Mulberry, San Antonio, Tex.

Swelling the Ranks

Since last we met, I've had pleasant letters from new clubs whose acquaintance you'd like to make, I know. First, there's *Mississippi Coast Camera Club* (Gulfport area). This group grew from zero to over 40 members in just about a year. Correspondent is H. M. Harris, 207 Klondike Rd., Long Beach, Miss.

Another southern aggregation is *Shades Valley Camera Club*, Birmingham, Ala. These folks are especially anxious for suggestions on how to keep a club going well. Write to G. G. McGinnis, 1722 Mayfair Dr., Birmingham 9, Ala.

And of course they'll welcome mail at the *Seventh Marine Regiment Photography Club*. Scuttlebutt is that this is the only camera club in the entire First Marine Division sector of Korea. Send communiques to Cpl. Bill Pfeiffer, Division Legal Section, 1st Marine Div., FMF, c/o FPO, San Francisco, Calif.

Northern Ohio Stereo Society welcomes members in its area. Write to Eugene Kleinman, 1156 Mayfield Ridge, Mayfield Heights, Ohio.

Print Show Available

A limited number of bookings is being made for the unusually interesting Central West Virginia Photographic Exhibition. Write to R. Lewis Hill, Art Center, Marshall St., Clarksburg, W. Va.

We hear that more clubs and club councils are bestowing honorary associateships and fellowships. This whole thing begins to get sorta funny, really. In many cases the person honored by the local outfit already has a PSA or an RPS honor, sometimes both. So the West Middle Southeast Camera Club Council makes him a Fellow (FWMSCCC). Then the West Nosebleed Photographic Club makes him an Honorary Associate (AWNPC). So our boy comes up with this on his letterhead: Joseph Q. Doakes, FRPS, APSA, FWMSCCC, AWNPC. Wow!

Following the 1954 PSA convention, one widely (and deservedly) honored photographer said to me: "If I get any more letters after my name, the tail will

now available . . .
the film designed for 35mm cameras

ADOX *film*

This famous film, designed specifically for miniature cameras, is now available in the United States. Its unique *ultra-thin* emulsion and unusually fine grain give superb resolution; make ADOX a "must" for superior 35mm work. ADOX always means contact print quality, even with considerable enlargement. From now on, when you want film that will do justice to the resolving power of your fine lenses, ask for ADOX.

ADOX film is manufactured by Dr. C. Schleussner Fotowerke, GmbH, Frankfurt a.M., Germany, one of the oldest manufacturers of film and photochemicals. ADOX is now being distributed in the United States exclusively through franchised Leica dealers. ADOX is made in three speeds: KB-14 (ASA 16); KB-17 (ASA 32) and KB-21 (ASA 80).

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EDIXA model A

the World's most astonishing low-priced 35-mm. camera. Equipped with fast F3.5 color-corrected coated lens with speeds to 1/200th second, built-in flash, rapid winding automatic lever which advances film, cocks shutter, moves exposure counter and prevents double exposures. Other features are: body shutter release, eye-level optical viewfinder, cable and tripod sockets. Beautifully finished in black morocco and chrome. Priced at only

$29.95 complete.

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MODEL C

A magnificent Coupled Rangefinder camera with fully automatic features and F2.8 Isconar color corrected lens in Pronto Shutter with speeds to 1/200th second; also, self-timer, built-in flash, rapid-winding lever, double exposure prevention, self-cocking shutter, and all other advantages of 35-mm cameras. Custom finished in black morocco and chrome. Priced at only

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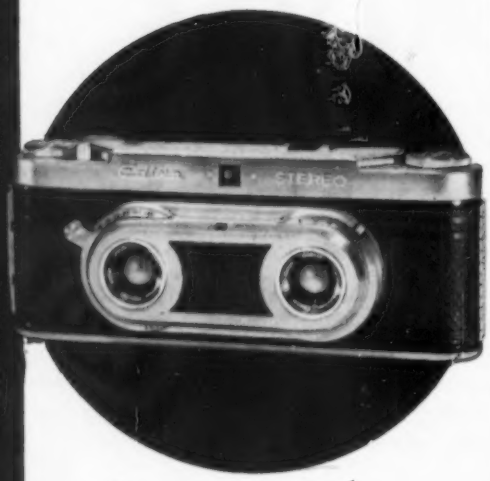

wag the dog—and I'll have to take a new sheet of paper every time I sign my name!" Look, friends — national honors are all very well, but enough is too much. When we start to get hopped up about somebody at the local or regional level, can't we just say he's a really fine photographer and a wonderful guy, and let it go at that?

Club bulletin editors, hear this: Jack D. True, editor of *Mississippi Coast Camera Club's* "Hypo Handout," especially asks that you put him on your mailing list. Club address is P. O. Box 807, Gulfport, Miss.

Clever idea: During Carleton La Porte's portraiture demonstrations at *Boston Camera Club*, they took Polaroid pictures as various lighting setups were used. Results of each lighting plan thus were recorded for quick reference.

Correspondence for *Boeing Camera Club* should be addressed to the club president, S. W. Silverman, Boeing Airplane Company Camera Club, Seattle 14, Wash.

Paul Brundage, secretary of *Northern California Council of Amateur Movie Clubs*, wrote me a very pleasant letter on the subject of what makes a club succeed. There isn't room for all of it here, but a few highlights will be interesting to you all. Among his reasons for a club's success are election of proper officials to serve the group; visiting among several clubs in an area; actual help offered to members; and formation of a club council, for the exchange of ideas, leadership, and so on.

Lee Stevens, Route 3, Stillwater, Okla., sends interesting news from the Sooner state. Seems that Oklahoma was one of the first states to include photography as a regular project for the enrollment of 4-H members. The thing caught on like a brush fire, and now the 4-H kids' pictures play an important part in club record books. The photographic project is aimed at encouraging and assisting the participants to use more and better photographs in 4-H work at the club level. The 1954 enrollment in this branch of 4-H activity in Oklahoma was 8,336.

Try this: *Metropolitan Camera Club Council* has put on a new kind of contest. Each contestant enters an unopened box of 20 slides as returned to him from processing. Each box is opened at the judging, and certain slides (their numbers decided by lot) are drawn and exhibited.

Jeepers—What an incentive to make *every* shot a good one.—

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35mm x 20 exposure cartridges in type A or outdoor (specify). Processing not included. **5 FOR 3.98** 66¢ Post. & ins.

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Load Your Own Cartridges. 50 ft. indoor & outdoor, complete with filter (specify size). **7.95** 35c post

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with 15" f5.6 lens

Takes 9x7 pic. Roll film or cut film. Comfortable hand grips. **179.50**

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2¼x3¼ Kodak PLUS-X 3 FOR **2.95**
4x5 Super XX . 3 FOR 3.75
35¢ post & ins.

8x10 BROMIDE

Enlarging paper. Single weight glossy. #F2 F1 & F3 100 shts. **3.29**

16mm HOUSTON K-1A

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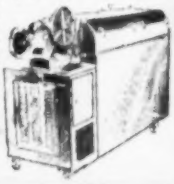
Similar to current model #11. For complete automatic reversal process. Complete with refrig unit, circ systems, compressors etc. Reconditioned **2950.00**



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Kodak Tri-X	2.25
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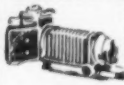

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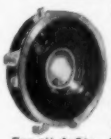

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50'	Mag Plus X neg	1.25
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5¼"x20'	Kodak Sup XX	6.40	2.25
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5½"x100'	Kodak Sup XX or Tri X		4.95
7"x12½'	Kodak Sup XX	6.50	
7"x18'	Kodak Sup XX	7.20	2.95
9½"x200'	Kodak Sup XX Ansco SSS		18.50

38¢ post & ins.

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10 Sheets 20 for 3.90 **2.45** 35¢ post

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I have just shot a roll of film and have a most amazing result: some of the pictures on the roll are yellowish, the others are very good. If the pictures that were yellowish were all together, I'd figure that maybe I got a yellow filter over the lens by mistake, but of the twelve pictures in the roll, the third, fifth, seventh, eighth, and eleventh have this yellow cast. Frankly, I am baffled.—B. J. R., Dallas, Texas.

Frankly, I was baffled too, until I did some thinking and investigating on this one. It occurred to me that Mr. R. might be using a press-type camera, shooting his roll film (120 size) in an adapter like the Graflex or Mar-Bar equipped with a defective "protective" slide. You may remember that some time ago there was an epidemic of "wild yellow" where it was found that the dark slides in some film holders would radiate after exposure to direct sunlight. Specifically, when these slides (now, fortunately, discontinued) were exposed to sunlight and the side that had been exposed was inserted facing the film, the radiation caused a yellowish cast to appear on the film. Now, I figured that Mr. R. might have had an adapter with a dark slide made of a material that caused the "wild yellow" effect. So I wrote him suggesting that he put the adapter on the camera loaded with film and go outside and make a couple of pictures before putting the slide which had been exposed to sunlight back into the adapter. Sure enough, the the frame in the exposure position at the time the slide was inserted came out with the yellow coloration. The procedure was repeated in a second roll of color film. Every time he took the slide out it got exposed to sunshine; every time he replaced the slide it affected one frame of film. But not every frame.

After replacing his adapter slide with one made of a different material Mr. R. repeated his series of sunlight tests and he now reports no more trouble.

All the dark slides made today are o.k., by the way. If you have had any suspicions about this or wondered whether some of yours may be giving trouble, the best thing to do is make a test. If you scrape the end or edge of a dark slide with a knife or file and smell it, and it gives off an odor like hard rubber, chances are it will not be troublesome. But if your dark slides are new, chances are you'll have no worry at all, anyway.

•

How do you prepare 4x5 Ektachrome transparencies for submission to magazines? Do you use glass mounts for this? How do you do it?—J. V., Watsonville, Calif.

I don't think any professional would recommend mounting 4x5 transparencies in glass unless they were to be projected. A great deal, of course, depends on your market and the handling, but most professionals working for magazines and agencies submit 4x5 transparencies just as they are—in the protective plastic sleeves you get for them. Sometimes I slip a piece of frosted acetate behind the transparency, between it and the cellophane-like sleeve. This tends to make it pick up more light and brilliance if you are not showing them on a viewer—and more important, it keeps the prospective buyer from turning it over and looking at it through the wrong side!

When I have some special Ektachromes, or when I do a job for an important client, I mount the 4x5's in black 8x10 mounts that have windows of 4x5 size. I also slip a piece of frosted acetate behind the transparency and then slip a transparent 8x10 sleeve over the whole thing. This makes for a nicer presentation and provides a frame for the transparency. In previous columns I've mentioned that many professionals mount their 2¼x2¼'s and 2¼x3¼'s in 4x5 windows, the latter covered with 4x5 transparent sleeves. Incidentally, if you have trouble getting these sleeves, write me, with self-addressed envelope, in care of POPULAR PHOTOGRAPHY magazine, and I'll send some sources of supply.

When I mention frosted acetate I refer to the thinnish cellophane that's frosted like groundglass on one side. Most art or drafting supply stores sell it in rolls or sheets.

•

Recently I made some pictures of a rainbow, but nothing came out on my film that could be recognized as a rainbow. Is there any filter to be used for this kind of picture?—B. S. McN., Rexburg, Idaho.

Rainbows are sometimes very tricky, particularly if they are light in color. First thing I'd do would be to try a Polaroid filter and see whether the sky could be darkened without destroying the effect of the rainbow. If so, I'd use the Polaroid filter to get the sky darker and the rainbow would then have more contrast against the sky. A slight underexposure will also help to darken the sky and let the rainbow appear deeper in tone and probably more noticeable.

•

I have been making color stereo pictures for teaching, but have trouble making close-up pictures. Unfortunately many of the subjects we need for teaching purposes require a very intimate close-up look. Is there any simple way to make close-ups?—H. B. B., Denver, Colo.

You don't say whether you are making these pictures with a regular stereo camera or whether you are making stereos with a still camera in two positions. However, the problem is a common and annoying one for stereo work. Best stunt

(Continued on page 127)

lamphouse
on the

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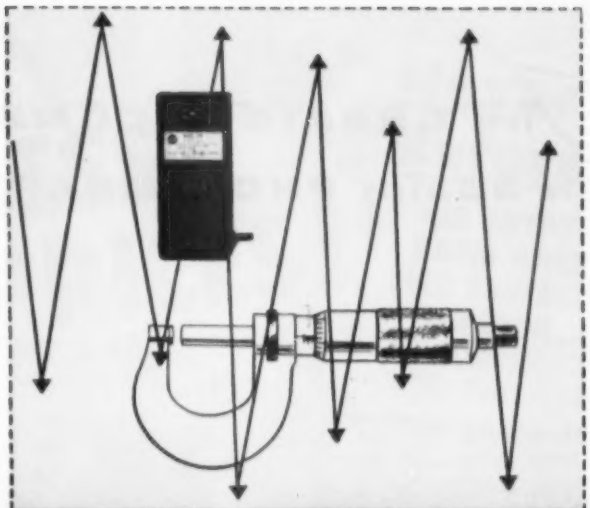

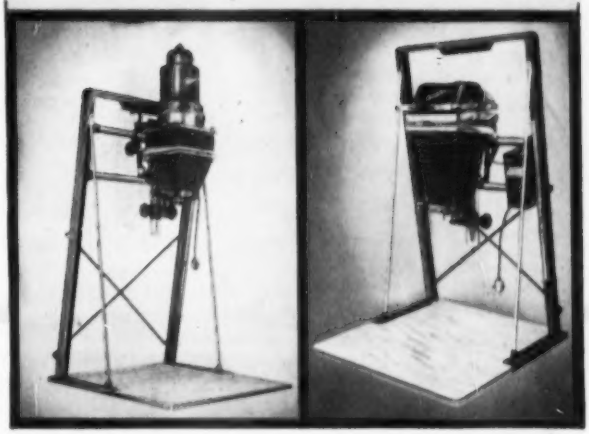

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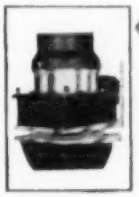

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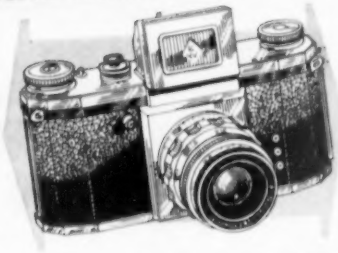

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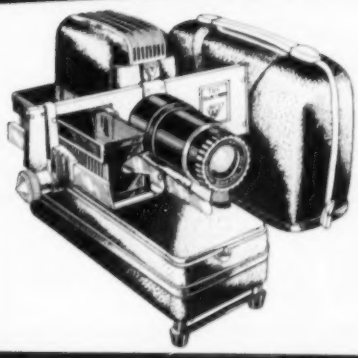

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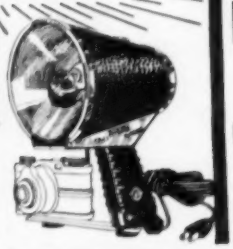

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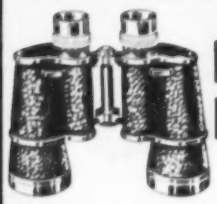

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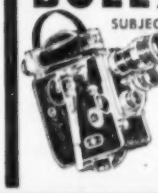

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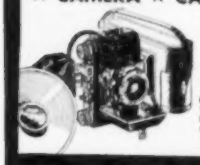

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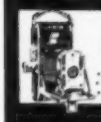

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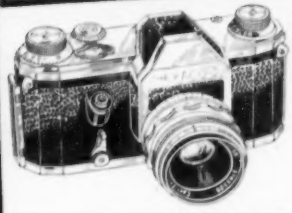

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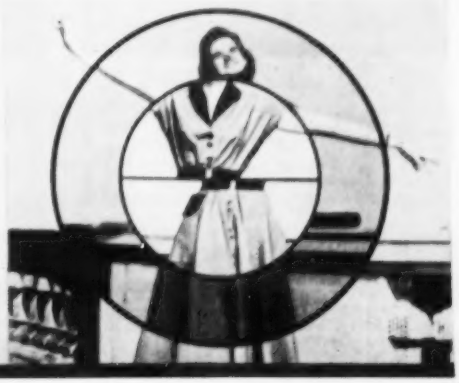

Area in inner circle shows critical rangefinder focusing.
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legal problems in photography

By George Chernoff and Hershel B. Sarbin
Members of the Bar of the State of New York

How the Courts Have Ruled on Nudes

OUR JANUARY COLUMN on *The Nude—Is it Art?* has resulted in many queries from our readers as to what types of such pictures have been frowned upon by the courts. The court decisions which in general language state that the test of decency consists of the fair judgment of reasonable adults in the community are perhaps not too enlightening to the average photographer. The language of the courts that the test to be applied is whether the pictures are calculated to appeal to baser instincts of mankind and tend to vulgarize the youth who might see them is perhaps also an elusive definition. We are asked for specific examples of the types of pictures passed upon by the courts.

A review of some of the cases which have arisen in New York may perhaps throw a little more light on the subject.

In one case the condemned pictures were found on a magazine rack in a candy store. They consisted of pictures published in sets displaying a strip tease. The models were shown in various stages until complete nudity was achieved. The court noted that the defendant was the manager of a candy store who sold the sets of pictures indiscriminately to anyone who desired to purchase them and emphasized the fact that this would hardly be considered a channel through which actual students of art usually buy their material. The court commented:

> Let us look at this case with a realistic approach. Here is a small neighborhood store serving the families of the area. It caters to high school children who come in; observe these pictures, purchase them and seek dark corners and privacy to snicker over its contents and pass the pictures around among their friends. This is a condition we may not be able to cure, but when the opportunity arises to alleviate it, it should not be allowed to pass.

In another case the photos consisted of

(*Continued on page* 146)

What would be the judicial verdict on these pictures?

Bona fide art masterpieces such as the Renoir below would seldom be termed obscene, but photographic nudes do not always fare as well. This one, done with skill and taste by Don Sherwood, would be unlikely to encounter trouble.

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40mm f4.5 Zeiss Tessar	75.00	49.50
50mm f1.5 Angenieux pre-set	165.00	99.95
50mm f1.9 Xenon auto.	169.50	120.00
50mm f2 Biotar pre-set	125.00	65.00
50mm f2.8 Westenar auto.	69.50	54.00
75mm f1.5 Biotar	216.50	99.00
90mm f2.5 Angenieux	84.50	54.00
90mm f1.8 Angenieux	149.50	100.00
85mm f2.8 Travenar auto-set	109.50	59.50
90 mm f4	$ 59.50	$ 28.00
90mm f4 pre-set	64.50	36.50
100mm f4.5		19.75
135mm f3.8	69.50	33.50
135mm f3.8 pre-set	74.95	39.95
135mm f3.5		33.75
135mm f3.5 pre-set	84.95	46.95
135mm f3.5 Travenar auto-set	99.50	54.00
135 f4.5 Steinheil	60.00	37.00
135mm f3.5 Angenieux	75.50	45.00
150mm f1.8 Astro	345.00	250.00
150mm f5.5 Schneider Tele-Xenar	64.95	35.00
180mm f2.8 Zeiss Sonnar pre-set		229.00
240mm f5.5 Tele-Xenar	124.95	75.00
300mm f5.6 Kilfitt Tele-Kilar	145.00	85.00
360mm f5.5 Tel'-Xenar	169.95	99.50
400mm f5 Astro	245.00	185.00
500mm f8 Zeiss Tessar	475.00	275.00
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Ikoflex IA f3.5	96.00	57.50
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10x10	SWSG	Varigam	125 sh.	4.50
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ASA Outdoor 10; ASA indoor 16

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28mm Serenar F:3.5 W.A.	134.00	79.50
28mm Nikkor F:3.5 W.A.	139.50	98.75
35mm Summaron F:3.5 W.A.	96.00	58.00
35mm Nikkor F:3.5 W.A.	97.50	54.75
50mm Elmar F:3.5	37.00	28.00
50mm Summitar F:2	88.00	62.95
50mm Summicron F:2	156.00	106.00
50mm Summarit F:1.5	177.00	113.75
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85mm Steinheil F:2.8	86.50	47.00
85mm Summarex F:1.5	360.00	179.00
85mm Nikkor F:2	179.50	89.00
90mm Elmar F:4 Chrome	90.00	58.00
90mm Thambar F:2.2	.....	87.50
125mm Hektor F:2.5	147.00	.....
135mm Hektor F:4.5	135.00	68.50
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35mm Nikkor F:3.5 W.A.	89.50	54.75
35mm Nikkor F:2.5 W.A.	149.50	92.50
35mm Biogon F:2.8 W.A.	.....	87.00
Biogon W.A. For IIA & IIIA	183.00	126.95
35mm Biometar F:2.8 W.A.	.....	98.50
50mm Tessar F:3.5	62.00	28.00
50mm Sonnar F:1.5	175.00	98.00
50mm Nikkor F:1.4	199.50	118.00
75mm Biotar F:1.5 coupled	.....	106.50
85mm Sonnar F:2	229.00	97.00
85mm Nikkor F:2	179.50	89.00
135mm Sonnar F:4	146.00	86.00
135mm Nikkor F:3.5	145.00	69.50
180mm Sonnar F:2.8 w/reflex	720.00	288.00
Zeiss Universal Finder	80.00	42.75
Zeiss Contameter	81.00	42.95
Zeiss IKophot Exp. meter	28.50	18.75
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40mm Tessar F:4.5 W.A.	75.00	44.95
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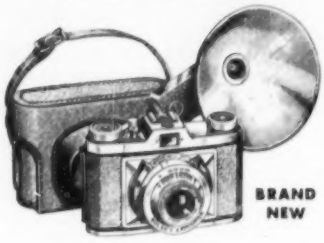
Including case & flash



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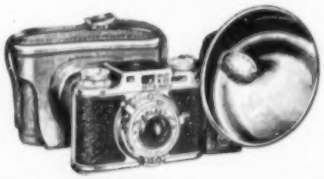

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Bolsey B-2, F:3.2 Rfdr.	59.50	27.50
Bolsey C, Reflex, F:3.2	79.00	41.00
Canon, Serenar f:1.8, Rfdr.	295.00	144.50
Contessa 35 Tess. 2.8, Rfdr.	142.00	86.25
Contax II Sonnar F:2	.....	85.95
Contax IIA, Sonnar F:2	336.00	158.00
Contax IIIA, Sonnar F1.5	412.00	196.00
Exa, F:2.8, Latest	85.00	46.25
Kodak Stereo F:3.5	84.50	53.95
Leica G, Summar F:2	.....	76.00
Leica IIIC, Summitar F:2	.....	98.00
Leica IIIC, Summarit F1.5	.....	148.00
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Retina IIA, F:2 ctd. autom.	127.50	73.95
Retina IIIC F:2 synch.	185.00	119.00
Robot II, synch. body	.....	26.00
Voigtlander Prominent F:1.5	270.00	136.50
Voigtlander Vito II, F:3.5 synch	54.50	24.95
REFLEX CAMERAS		
Ciroflex B F:3.5	.....	24.00
Exakta 66, Tess. F:2.8, Latest	319.50	185.00
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Rolleiflex Auto Tessar F:3.5	.....	89.50
Rolleiflex Auto Xen. 3.5 'XM'	219.50	118.00
Rolleiflex Auto Tess 3.5 'XM'	239.50	127.50
Rolleicord V MX Xenar 3.5	134.55	.....
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B & H Auto-8, 172-8, F2.5	134.95	74.00
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B & H Filmo 70-DL, F1.9	364.95	218.00
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Cine Special F:1.9, Acc.	.....	258.00
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Revere 85, 500W, case	124.50	59.25
Keystone A-82C, 750W, case	129.50	75.95
Keystone K-161-V, splicer, case	159.50	85.25
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Argus PB300, Blower, case	48.50	27.00
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LaBelle '55' Autom. 500W	95.00	55.75
Kodak Signet I, 500W, blower	72.50	.....
AO 'Performer' 500W, Blower	79.50	48.00
AO 'Reviewer', 500W, 2 ¼x2 ¼	95.00	54.00
TDC 'Headliner' 300W, Selec.	49.99	28.95
TDC 'D' deluxe, 300W. Selec.	67.50	36.50
TDC 'DUO' 2 ¼x2 ¼, 300W bl.	67.50	36.50
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TDC Stereo Project-or-View	144.50	96.50
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16mm Movie Camera 100 foot roll capacity 2.5cm coated lens.

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Complete outfit, L.N. $338.95

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- 3 x 3 slide projector
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- 300 w. blower
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USED $31.25

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Film is a matter of confidence—you never know, if you get a 'bargain' until it is too late. Spiratone's prices are the lowest possible—for consistently reliable film. That's why not only thousands of amateurs, but scores of professionals, of hospitals and colleges, of scientists and government agencies—in short, critical users who can't gamble—rely on Spiratone. Play safe—use only Spiratone tested and recommended film.

FRESH SAFETY KODAK B&W FILM

All four popular speeds, Panatomic X (Background X), Plus X, Super XX and Tri-X are available in 27½ ft., 50 ft. and 100 ft. lengths and 20 and 36 exposure reloads.

27½ ft. $1.30 · 50 ft. $2.20 · 100 ft. $3.98

Shipping charges 10c, 30c, 40c

COMBINATION SPECIAL
Daylight loader with 5 cartridges and 100 ft. of black & white film, a $8.98 value $7.99
Shpg. Wt. 4 lbs.

BLACK & WHITE RELOADS
in metal cartridges may be assorted

20 EXP.	36 EXP.
40¢ ea.	60¢ ea.
6 for $2.00	4 for $2.00

Shpg. Chgs. 1 or 2 5c; 3 to 6 20c; 7 to 12 35c

ALL YEAR B&W ASSORT.
Daylight loader with 5 cartridges plus 27½ ft. each of Panatomic X, Plus X, Super XX and Tri-X $10.49

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COLOR FILM COSTS SLASHED BELOW THE USUAL COST OF BLACK & WHITE FILM!

A carefully quality-controlled colorfilm, processed in one of the country's most modern plants. Made to our specifications, the low cost is due to direct maker-to-user distribution.

Spiratone Private Brand would cost just as much as other color films, if sold through the usual channels.

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20 Exposures		36 Exposures	
each	$1.98	each	$3.29
3 for	5.40	3 for	8.99
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Prices include 5-day processing and mounting
Ship. Chgs. 1 to 3 5c; 6 or 7 30c.

AERO EKTACHROME

In response to the great demand for dependably presented, properly processed Aero Ektachrome, we have, after exhaustive tests, made arrangements with an excellent laboratory, assuring the only correct processing which will produce good results. Allowing for an ASA speed 40 for well-balanced transparencies. Prices include 48 hr. processing and return postage.
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35MM IN METAL CARTRIDGES
20 EXP. $1.77 ea. · 3 FOR $4.88

120, 620, 8 exp., 2¼ x 3¼ or 12 exp. 2¼ x 2¼ $1.88 ea. · 3 FOR $5.25

2 x 2" 10 PC. NATIONAL PICTURE SLIDE SETS

50% OFF

Yes, these famous sets of 2 x 2" full color slides of which hundreds of thousands have been sold at $1.00 per 10 are now brought to you at half price! Scenics from all over U. S. and many foreign countries, and children's stories — any eight sets (80 full color 2x2 slides with subject matter imprinted) $4.00 postpaid. Choose from these: Washington, D. C., New York City, Niagara Falls, Yellowstone, Miami, Grand Canyon, Yosemite, Italy, Egypt, France, Ireland, Mexico, Israel, India, Spain, Turkey, Switzerland, England, Portugal, Alaska, Hawaii, Japan, Children's subjects (Circus, Tarzan, etc.), Flowers, Show Girls. Two sample sets (20 slides) with complete lists ppd. $1.35. Limited Supply—state some alternates, please.

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2 for 4.15
4 for 8.00

Accommodates 300 redimounts or 150 glass slides. Slots prevent rattling. Index. Clamp lock and handle. *Shipping Weight 3½ lbs. each.*

2 x 2 GLASS SLIDEBINDERS

- Comparable to 6c slidebinders.
- One of the finest methods of mounting transparencies (35mm Argus, Leica size) betw. glass!

2½¢ ea. in lots of 200

The biggest bargain in quality slidebinders ever offered. Pregummed Fibreboard, self-centering of slide, provision for type on titles, dustproof, lintfree, shockproof — all these advantages are yours for less than the usual cost of glass alone! Why risk fingerprints and scratches on your irreplaceable color shots? 200 for $5.00.
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200 single frame (Mercury) Masks $1.75 | Masks fit glass 200 Square (Robot, Tenax) Masks $1.75 | & metal binders 2x2" cardboard mounts for single frame (Mercury size) transparencies 50 for 55c. *Sh. Wt. per 100, 1 lb.*

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The ultimate in simplicity! Aluminum glass binders may be used over and over again. Just place transparency between glass, insert in metal non-warp frame. Sample package of 18, $1.50 ppd.; 54 for $3.51, 100 for $5.95, 600 for $29.95, 1800 for $72.00. *Ship. Wts. 2 lbs., 4 lbs., 21½ lbs., 60 lbs.*

as low as 4¢ ea.

THE FINEST, FRESHEST, SAFETY ANSCOCOLOR

SPECIFY IF DAYLIGHT OR TUNGSTEN

RELOADS INCLUDING PROCESSING
EA. $1.98
6 for $10.80
36 for $37.20
$1.55 EA. IN LOTS OF 24

in metal Kodak cartridges—processed within three days in our modern laboratory!
Shpg. Chgs. 1—5c; 6—30c.

ANSCOCOLOR FILM
27½ ft. incl. 5 cartr. $6.95
50 ft. incl. 8 cartr. 11.95
100 ft. incl. 10 cartr. 22.95
Shpg. Chgs. 25c, 35c, 50c.

4x5 ANSCOCOLOR CUT FILMS
daylight type. 10 for $2.75.

120 and 620 ANSCOCOLOR
1956 dating, factory packed. Prices include rapid processing. Specify daylight or tungsten. $1.39 ea., 3 for $5.00.

COMBINATION OFFERS

Daylight Loader, 27½ ft. Anscocolor, 10 cartridges, 100 glass binders. All for $14.95

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Ship. Wt. 4 lbs.

Above outfit, plus daylight loader and five more cartridges $16.84

TRIAL SET 20 exp. Anscocolor Reload, chemicals for processing, mounts and simple instructions—All for $2.50
Ship. Chg. 25c

35mm DAYLIGHT LOADER

INCLUDING 5 CARTRIDGES

$4.95 IF PURCHASED TOGETHER WITH MINIMUM OF $7.95 WORTH OF BULKFILM.

It's so simple to take advantage of the exceedingly low cost of 35mm bulkfilm and to load any desired length into a standard Eastman cartridge. First few reloads already make loader pay for itself. Loader alone with 5 cartridges, $5.95. *Sh. Wt. 4 lbs.*

BELUX LOADER, with automatic counter, accepts also Leica, Contax cartridges — $10.95 or add $5.00 to comb. offers.

FREE FILM TONGUE CUTTER with your order for $5.00 or more of bulkfilm, or $4.00 worth of bulkfilm plus loader. For perfect shaping of tongue to assure smooth loading. Must be requested at time of purchase.

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This film is really a challenge to the imaginative photographer. It penetrates distant haze, takes "moonlight" scenes in broad daylight, creates unusual contrast effects. Use orange or red filter. For extreme results, use special INFRARED FILTER. Ser. V $1.39, Ser. VI $1.59, Ser. VII $2.98. *Kodak Data Book on Infrared 35c.* For Blackout (invisible) flash photography use INFRARED FLASHBULBS, 5/$. Each 22c. 17 for $2.25. 4x5 KODAK INFRARED CUT-FILMS—25 for $1.00, 100 for $2.50.

Shpg Chgs 1-3 5c, 5-10 20c

20 exp. roll, 50c—5 for $2.00
36 exp. roll, 80c—3 for $2.00
27½ ft., $1.79—50 ft. $2.79
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An extremely fine grain pan film for making reduced copies of books, letters, etc. ASA Tun. 16. Has finest resolving power of any 35mm film, 175 line per mm (double that of Plus X).
Prices for 20 exp., 36 exp. bulk, same as Infrared.

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$2.59

For the cleanest, the most efficient way for binding slides between cover glasses (2 x 2 or 2¼ x 2¼), it's the new Mansfield Slidebinder. While glass sandwich is held in rubber-covered viselike arrangement, tape can be rolled freely and applied to glasses. *Shpg. Wt. 2 lbs.*

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LOWEST PRICES EVER

$7.69

- Crystal-beaded Pyroxilyn surface.
- Screen raises and lowers on elevating rod, assuring positive alignment.
- Carrying handle sets automatically for balanced carrying.

Despite higher steel prices, Spiratone continues to offer you the biggest bargains in screens ever! Same quality as before, and as praised by thousands of movie and slidefans. Metal can has beautiful scratch-resistant finish. Sturdy tripod is plated and has protective rubber tips. Thousands of these screens are in use, not only by amateurs, but by clubs, churches, colleges as well.

Screen Size		Ap. Sh. Wt.
30 x40"	7.69	10 lbs.
40 x40"	9.18	11 lbs.
37 x50"	10.64*	14 lbs.
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FREE with any screen — 20 2x2 color Slides or 50 ft. Movie Feature (state if 8mm or 16mm).

*Screens are shipped by us Express (freight costs collect) within U.S. — other screens Parcel Post or Express.

300 WATT PROJ. BRAND NEW $24.95

- Famous make
- Blower-cooled
- All metal die-cast design
- 5" (3.5 Achromatic lens
- Double condensers
- For 2 x 2 slides
- With two-way slide carrier

With automatic changer and one magazine $35.50

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FREE Dictionary on common 35mm film terms. State camera you have when requesting.

accessory parade

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The most useful lens accessory made, equally suited for ALL color and b&w films.
Eliminates reflections in scenery, water, show-windows, increases contrast between cloud and sky, the ONLY sky filter usable with Kodachrome, Anscocolor, Ektachrome. Polascreens have double threaded rings to allow use of extra filter or closeup lens, handle for convenient adjustment of maximum polarizing effect. *Sh. Ch. 10c.*
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Ser. IV 3.75 Ser. VI 4.75
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From Japan comes a most compact (1¾" x 1" x 2¼"), yet extremely sensitive photoelectric exposure meter which competes in accuracy with the finest and most expensive meters. Calibrated in ASA speeds (from 6 to 800), for lens openings from f.1 to f.32, the meter measures reflected and incident light, has settings for stills and for movies, for conventional as well as light value Compur shutters. One hand operation. Richly illustrated 16 page instruction booklet. Everready Top-grain Leather Case and Metal Carrying Chain $1.50. *Shipping Charge 15c.*

SYNCH YOUR OLD CAMERA

- Fully adjustable mechanical tripper, requires no installation, works through standard cable release socket of most old cameras. Has fitting for standard flash cord.
- Allows adjustment for flash bulbs and zero (X) delay for Strobe. $2.49 PPD.

Tripper with famous make all metal flashgun (Flashgun only is $6.95 value, has bracket, accepts screw base bulbs, bayonet base adapter 39c) *Shipping Weight 2 lbs.* $4.95

FAN-TYPE BC POCKET FLASH

$6.95

- At last, a completely collapsible flash at a down-to-earth price!
- Sturdy battery case has built-in test lamp, ejector, accepts standard bayonet bulbs.
- 6" diameter metal reflector has special pebble finish for maximum reflecting power, instantly telescopes making entire unit a bare 5" x 2".

FREE Elegant zipper-pouch, attachable carry strap.

EXTRA FEATURES: Extension outlet—no other flash under $10.00 has it! Standard shoe, fits on accessory clips. BRACKET, for use on any camera, $1.00. Cord available for all Compur and Kodak synch terminals. For Kine Exakta, Praktiflex FX, Leica M3, Realist, Argus C3, C4, add $1.00. BC battery, lasts for a year, $1.00.
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10 FT. CABLE RELEASE $4.49

with setscrew and booster spring

A sturdily constructed German cable for remote control work to operate with any Kodak or Compur type shutter. Imagine the many new possibilities this release opens up for you—whether you photograph wild animals, unsuspecting children at play or take a self-portrait, you'll find this release a valuable accessory. (Leica model add 25c.) *Shipping Cost 25c.*
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KOILED FLASH CORD $1.98

- Now available for most shutters. *Sh. Chg. 10c*
- Patented coiled cord extends to 3 ft., yet coils up without effort to only 7".

So handy when you want to hold flash away from camera, place electronic flash closer to subject than camera! Available with standard polarized household type plug for Heiland, etc., and prong-type for Kalart to fit Compur, Prontor S, ASA (Kodak), Solenoid, Argus C3, C4, Nikon, Realist, Praktiflex and Exakta synchronized terminals.

CHANGING BAG

ONE OF THE MOST IMPORTANT "TOOLS" OF ANY PHOTOGRAPHER

Double zippered inner and outer bags, made of the finest cloth, make this bag 100% light proof even in brightest sunlight.
Whether for use in an emergency, with a film torn or pulled off the spool in a 35mm camera, or for reloading cut film holders or for developing film when no darkroom is available . . . the changing bag is justly referred to as a "portable darkroom". 17"x16" working space plus elastic sleeves.
All these features at the lowest price a quality changing bag that was ever offered at. *Shipping charge 25c.* $3.95
PROFESSIONAL MODEL: 27"x30" working space, ($11.00 value) *Shipping Charge 50c.* $6.95

KING SOL SOLENOID $5.59 ppd

Assures perfect synch at all speeds with Graphic, Busch, Ciroflex Rapax, Rollei—the professional way. Instructions for press camera installation supplied—others have mechanic install. Was $15.00!

All prices include excise tax. Postage and insurance MUST be prepaid, even when no shipping weight is stated — overpayment will be credited in full. Everything listed is brand-new (unless otherwise stated) and fully guaranteed against defects. 25% deposit on C.O.D.'s. Items marked 'Free', 'Premium' or 'Bonus' MUST be requested at time of purchase. Foreign orders welcome — slight extra handling charges apply.

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2" x 2" SLIDES
300 WATT
BLOWER-COOLED

Your Brightest Buy

AO† 300 SLIDE PROJECTOR

Now complete with Case and Airequipt Automatic Changer

There's a world of difference in slide projectors. These five simple tests will quickly prove how much more you get for your money with an AO 300. Try them and judge for yourself.

Look for the brightest picture. The brighter the projected picture, the more life-like your slides will be. A simple exposure meter test, using an empty slide frame, proves that no other 300 watt projector AT ANY PRICE, can beat an AO 300. Illumination is unusually bright and even from edge to edge.

Is the light white? Only pure white projected light faithfully reproduces the colors in your slides. Specially constructed AO 300 lens, condensing system and heat filter protect light from color distortion.

Does it focus sharply, easily? The smooth, positive spiral action of AO 300 projection lens makes focusing a quick, simple job.

Does the changer smoothly center slides? Whether equipped with an Airequipt Automatic Changer or special AO Built-in Changer, an AO 300 always smoothly centers slides.

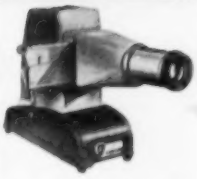
How cool? Slides may be left in an AO 300 for hours without trace of harm or scorching. Exclusive AO blower system keeps the projector cool and slides safe.

Only
$59.95

FREE — *Send for sample test slides and pamphlet on* "HOW TO SELECT A SLIDE PROJECTOR". *Dept. PH-5.*

American Optical
CHELSEA, MASSACHUSETTS

AO Performer 500 — For 2" x 2" slides. 500 watt, blower-cooled. 5" AO coated lens. $79.50. Case extra.



AO Reviewer 500 — For 2¼" x 2¼" and 2" x 2" slides. 500 watt, blower-cooled. 5" or 7" coated lenses. $95.00 up.

† T. M. REG. BY AMERICAN OPTICAL COMPANY

candid shots by the Editors

Contest Is Well Under Way

Early entries are already coming in steadily for POPULAR PHOTOGRAPHY'S 1955 Picture Contest, and competition promises to be stiff as usual. If you've been daydreaming about what you could do with a share of the $25,000 prize money, remember you can't win if you don't enter! Putting it off is no good, either. It's too easy to delay until the very last minute, then find it takes a couple of days to get a set of prints ready. So if you want to be sure you're not left out in the cold, be one of the early entrants. We'll be watching for your package.

We Go to *The Family of Man*

Our treatment of Steichen's huge and provocative exhibition at the Museum of Modern Art (pages 80-88) is original and unique among magazines, so far as we know. We felt even a generous portfolio of individual pictures could give only a meager sample of the whole show, and we wanted to convey to our readers a sense of actually being in the museum, of seeing the show much as you would if you were here in New York. So we called on one of the nation's outstanding photographers of interiors, Lionel Freedman, to photograph the galleries. He tackled the job with an 8 x 10 Deardorff view camera and 6½-inch wide-angle Dagor lens. The show was so well lighted that he seldom had to supply his own illumination. For maximum depth he usually stopped down to f/64, and exposures ran about one minute on Super Panchro-Press Type B film. Whenever unwanted light struck the surface of a picture and would have caused a "hot spot," Freedman used a polarizing filter on the lens. Our congratulations to him for a superb job! We're sure you'll like it too.

Freedman at the Steichen show.

Home Movie Makers Merge

It looks as though just about every amateur movie photographer in the country who belongs to a national organization now belongs to *the* organization. Until early this year, there were two big groups serving home cine fans, the Amateur Cinema League and the Motion Picture Division of the Photographic Society of America. Now they are one; the ACL membership has voted unanimously to join with the PSA for solidarity and greater service. *Movie Makers*, the ACL publication, has been discontinued; at the same time the motion-picture coverage of the *PSA Journal* has been greatly expanded to compensate for it. Plans call for retention of ACL's annual competition to uncover the year's ten best amateur movies, for continuation of its annual "Oscar" award, and for recognition of honors conferred upon its members. PSA president Norris Harkness and ACL president Joseph J. Harley joined in expressions of enthusiasm and hope for the future of the big new group.

The Picture That Turned to Bronze

In connection with our story on the Pulitzer Prizes in photography (pages 53-55), we'd like to call to your attention,

A classic come to life.

if you haven't already heard about it, that one Pulitzer winner has been immortalized in bronze statuary. It's Joe Rosenthal's classic of the Marines raising the flag on Iwo Jima; sculptor Felix de Weldon turned out the 75-foot 100-ton statue for the Marine Corps memorial in Washington, D. C. Incidentally, we're told that Associated Press is still using the beat-up Speed Graphic that Rosenthal used to make the original picture.

Going to Italy or Turkey?

If you happen to be in Turkey or Italy at the moment, or expect to go there, you will be interested in a dispatch from Kodak about color-film processing. It seems those are the only two countries from which you may not mail exposed film for processing. In Italy you can send Kodachrome or Kodacolor film to Kodak S.p.A. in Rome at Via Nazionale 26-27, or in Milan at Via Vittor Pisani 16; it will be forwarded to the Kodak lab in Paris. Or you can take the color film out of Italy in your hand baggage and mail it to the U. S. from another country. With Turkey it's quite a different matter. The government, for security reasons, forbids sending or taking exposed but undeveloped film out of the country. Kodak doesn't have any suggestions about this.—▶

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EDITORIAL

How important is THE PULITZER PRIZE?

By BRUCE DOWNES

AN EVALUATION OF A FAMOUS AWARD FOR NEWS PICTURES RAISES PERTINENT QUESTIONS AND CASTS DOUBT ON ITS VALIDITY

All photos from Wide World

EVERY YEAR since 1942, with the exception of 1946, the trustees of Columbia University have awarded Pulitzer Prizes for what they regard as outstanding news photographs. They will do so again this year on Monday, May 2, and the chances are that the $1,000 cash bouquet will go to a picture made by somebody (press photographer or amateur) who happened to be within rangefinder distance of a sensational event.

At least there is no visible reason to suppose that the 1955 Pulitzer Prize will in any way raise the standards of photojournalism or even throw its spotlight upon extraordinary achievement in press photography. It has seldom done so in the past—as a quick glance at the winners reproduced on the following pages should show—and is unlikely to do so now.

Certainly the record isn't very impressive, and it raises some big questions that might just as well be asked now: After fourteen years does the Pulitzer Prize for press photography carry with it any real prestige? Is it a genuine honor to receive it? Do the prize winners really represent the finest flowering of photojournalism?

It would be hard to give anything but a negative answer to those questions. For apparently neither the trustees nor the advisory board of this citadel of academic journalism have more than a token regard for photojournalism. Oddly enough, of the fourteen Pulitzer Prizes awarded each year, all but the one given for news photography are referred to as "*distinguished* examples." When they get down to describing the news photography award, the trustees, gagging on "distinguished," substitute the safer "outstanding."

Are the trustees ashamed of news photography? Do they regard photojournalism as a nuisance made necessary by the stubborn presence of the photograph in our civilization? Are the trustees so old-fashioned that they still consider the single sensational picture the whole object of photojournalism? The fourteen-year record of this award says, "Yes!"

If the Pulitzer Prize in news photography is supposed to be a beacon guiding young journalists toward creative achievement, then it has failed. For the goal it holds up is more often than not the sensational picture. Catch a woman's body hurtling through space with panties showing (see the 1947 prize winner) and you'll probably win the Pulitzer benediction, which carries with it the seal of Columbia University.

Photojournalism has grown enormously during the last dozen years, but the Pulitzer Prizes have taken no cognizance

HERE ARE ALL OF THE PULITZER WINNERS: ARE THEY THE BEST U.S. NEWS PICTURES?

1942 Shot of disorder at Ford River Rouge plant won the prize for Milton Brooks of the *Detroit News*

1943 Frank Noel of *AP* won with this picture entitled "Water."

1944 Dead Japanese on Tarawa Island won for Frank Filan of *AP*.

1944 Two awards were made this wartime year. Earle L. Bunker of the *Omaha World-Herald* won with "Homecoming."

1945 Mt. Suribachi flag raising by *AP's* Joe Rosenthal.

1947 This is the famous Winecoff Hotel fire death leap shot by amateur Arnold Hardy, Georgia Tech student.

1948 Frank Cushing of the *Boston Traveler* won with this picture of a youth with revolver using boy as shield during gun battle with police.

1949 This shot of home-run king Babe Ruth's last appearance in uniform was made at Yankee Stadium in 1948 by *AP* photographer Harry Harris.

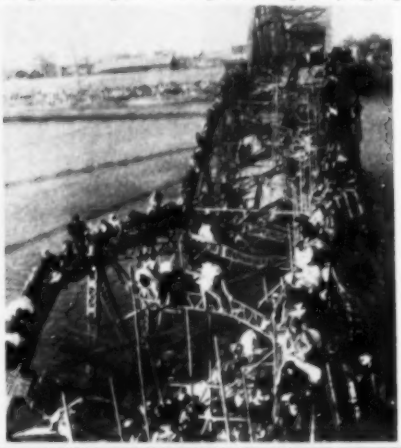
of that growth. The picture magazines, led by *Life*, have evolved new techniques for the journalistic use of pictures that have revolutionized journalism. The day of the single-picture scoop is rapidly being made less important by the more convincing immediacy of television.

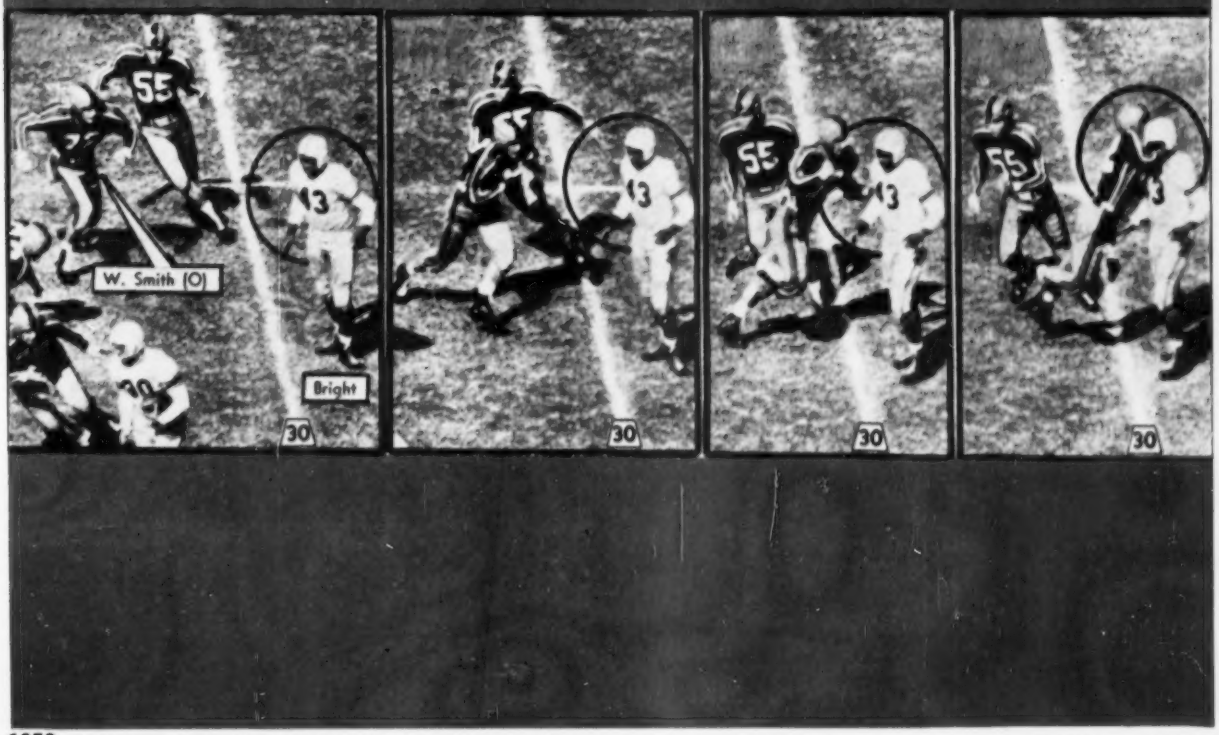
This is not an indictment of news photographers, who day in and day out do a far more important journalistic job than the Pulitzer Prizes would have you believe. It is a criticism of Columbia University and its School of Journalism, which apparently have made no effort to remove the strait jacket from the Pulitzer awards in photojournalism, and which persist in glorifying the lucky scoop. It is about time that the trustees recognized the existence, if not the great importance, of magazine photography.

As of now the Pulitzer Prize in photojournalism is half-baked. Unless it includes all photojournalism, rather than just news photography, it might as well quit. Half a loaf is not better than none.

1950 Upside-down stunt flyer narrowly misses a B-29 at Oakland, Cal., air show. Made by Bill Crouch, *Oakland Tribune*.

1951 Max Desfor, *AP* photographer, shot these Korean refugees crawling over Taedong River bridge at Pyongyang.





1952 John Robinson and Don Ultang of the *Des Moines* (Iowa) *Register* shared the prize for this sequence which shows how Johnny Bright was injured in Oklahoma A&M game.

1953 W. H. Gallagher of *Flint* (Mich.) *Journal* won with Adlai Stevenson's worn sole.

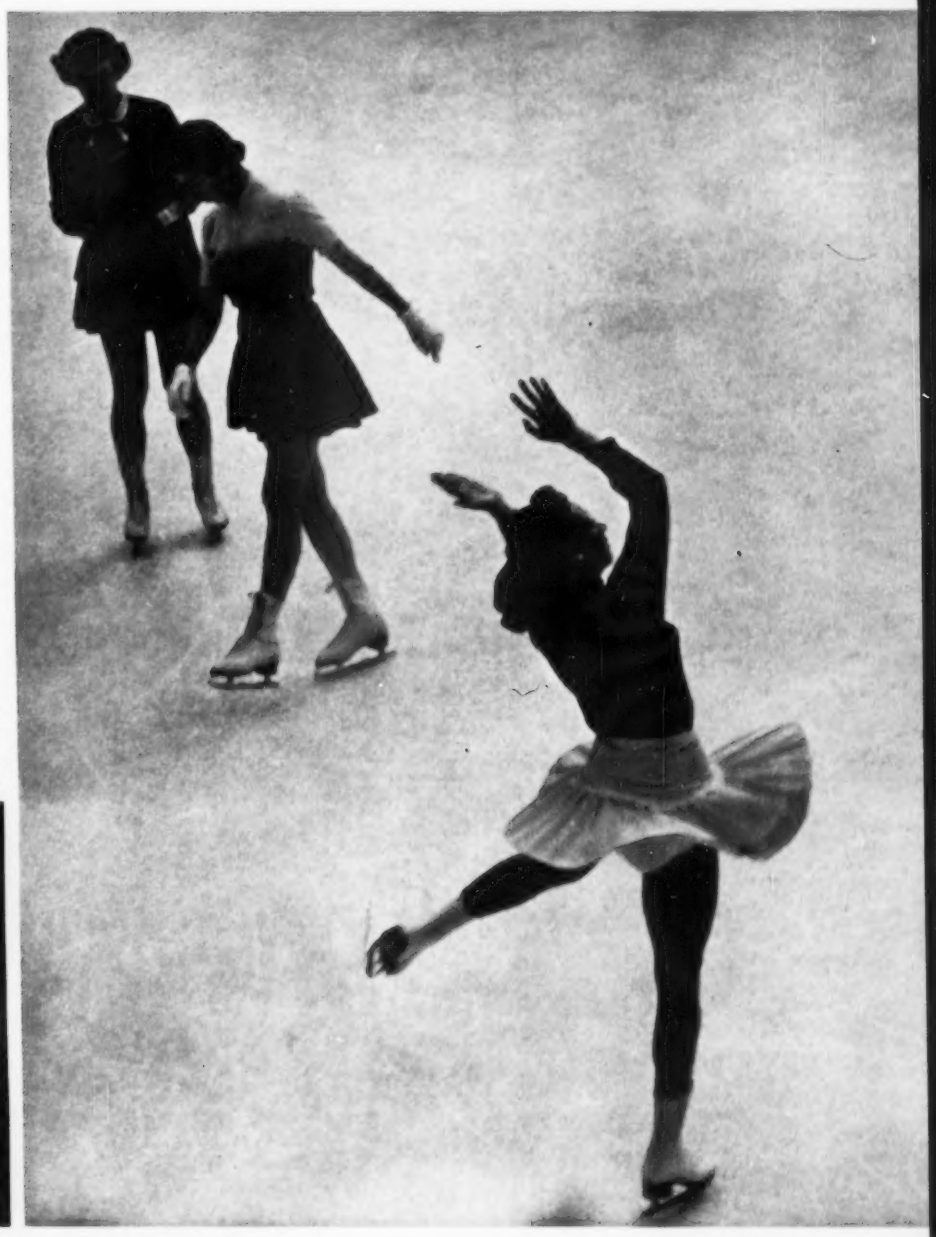
1954 An amateur, Mrs. Walter M. Schau won with this bridge rescue picture.

1950 Upside-down stunt flyer narrowly misses a B-29 at Oakland, Cal., air show. Made by Bill Crouch, *Oakland Tribune*.

Your twin-lens reflex has a

built-in telephoto!

You can blow up small areas of your 2¼x2¼ negative and get long-lens effects



←

Blow-up from small area of 2¼x2¼ negative produced picture similar to what a telephoto lens would get. There is no distortion in window lines. The grain is not objectionable.

Close-up of skaters at Rockefeller Center's rink was made by enlarging small section of over-all shot. Using this technique, you can get close-up action shots from grandstands.

By BOB STUBENRAUCH

Photographs by the author

YOU CAN produce pictures that look as if they were made with a telephoto lens simply by blowing up small segments of your 2¼x2¼ twin-lens reflex negatives. If you're as careful in processing as you would be with 35-mm film, you will lose little in the way of quality.

By following the technique that I use you will be able to get candid shots from positions that were meant for over-all shots, unusual close-up action shots from grandstands, and new object relationships in landscapes and city scenes.

The technique I use is simple. Here's how it works:

1 When taking a picture, make sure the camera is rock steady—either use a tripod or brace yourself firmly.

2 Use as high a shutter speed as possible, and focus carefully.

3 Develop in extra-fine-grain developer like Ansco Finex, or Kodak Microdol.

4 Enlarge through a lens of short local length. If you have only one lens for 2¼x2¼ use, try projecting onto the floor of your darkroom.

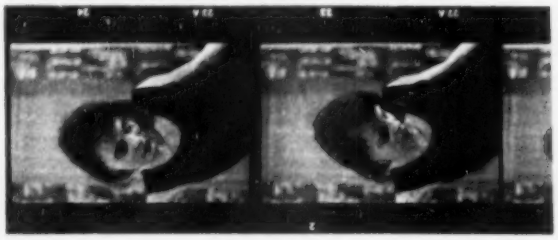
Remember, the slightest vibration of your camera in taking, or of your enlarger in projecting, will throw your picture off.

In focusing, I use the magnifier on my twin-lens reflex before I shoot, and a magnifying device in checking my enlarger image before making a print.

However, before you go out and shoot something special using this technique, test the resolution powers of your lens, developer, and film (plus your enlarging technique) by running through a roll of film from some nearby hilltop.—

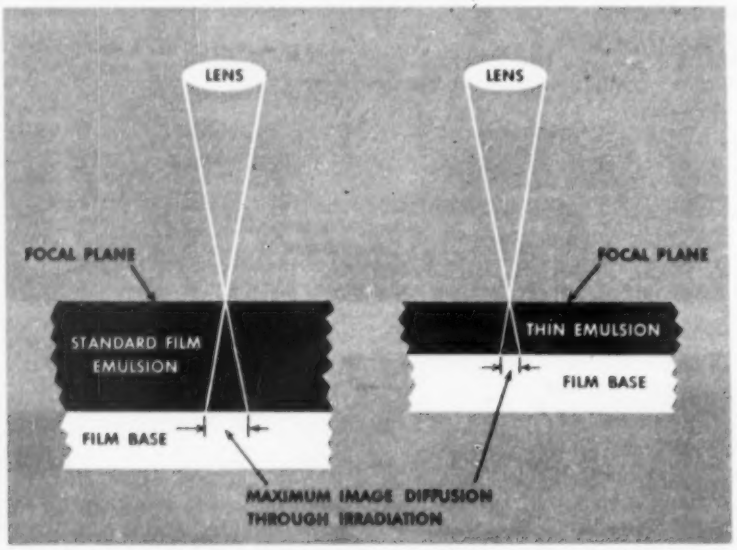
EXCLUSIVE

Crisp, low-grain 22x blow-up at right was enlarged from Adox KB-17 film negative developed 22 min at 68 F in Neodyn Blue—Leica M-3, 50-mm Summicron lens; 2 RFL-2 floods; effective exposure index, 40.



ADOX

THIN-EMULSION FILM



Thin emulsion of Adox films minimizes irradiation, achieves optimum detail resolution.

A new approach to sharp, fine-grain image quality in 35-mm negatives

By BOB SCHWALBERG

A VIGOROUS DEBATE has been going on among 35-mm enthusiasts in Europe during the past year over an old, long-forgotten whipping boy—fine grain. The argument is reminiscent of the explosive battles between the fine-grain devotees and the natural-light addicts which made life so exciting throughout the 1930's. The innocent cause of this latter-day controversy was the European debut of two new fine-grain, high-resolution films, Adox KB-14 and KB-17—both products of C. Schleussner, Frankfort, Germany.

Now, with the Adox films available in this country, the fine-grain debate is burgeoning here. It remains to be seen whether, in this age of coarse-grained available-light photography, fine-grain techniques can gain the solid foothold they had in the 30's. But the films are here, they are new in principle, and they should be of much more than passing interest to photographers.

The numbers "14" and "17" which identify the new Adox films refer to the films' speed ratings in the German DIN system—14/10° and 17/10°—which, when roughly translated for exposure meters calibrated in ASA exposure index numbers, represent the unprepossessing speeds of 16 and 32 respectively. What makes these films so interesting is their thin emulsion layers, which are about two-thirds as thick as normal photographic emulsions and which yield a combination of long-scale gradation, extremely fine grain, and high image resolution—surpassing the performance of any other films we have ever tested. *(Schleussner makes a third 35-mm thin-film, KB-21 (ASA 80), but this discussion will be limited to their two remarkable slow emulsions, KB-14 and KB-17.)*

Two questions should be fairly obvious at this point. The first is: "Why have a thin-emulsion film?"; and the second: "If thinness is such a big advantage, why are most films made with such thick emulsion layers?"

The answer to the first question is, primarily, *resolution*. All other things being equal, a thin-emulsion film is capable of resolving more image detail, and of producing sharper prints upon

ships in landscapes and city scenes.

floor of your darkroom.

film from some nearby hilltop.—▶

RESOLUTION COMPARED

Wire-sharp 8-diameter blow-up was made from KB-14 film negative exposed at ASA 25 and developed 20 min at 68 F in Neodyn Blue.

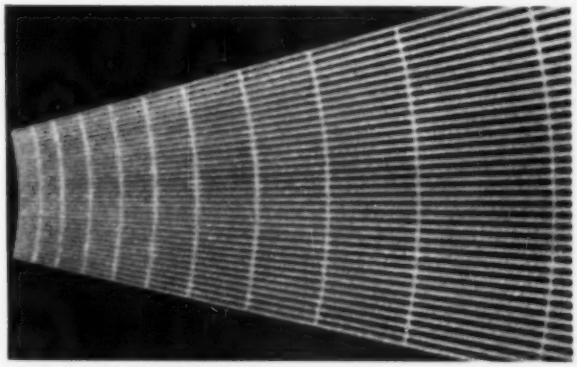
Notice all that fine detail

Section of scene at top of page was enlarged 35x on hard-grade paper to emphasize grain pattern, which remains exceptionally fine—made with condenser enlarger.

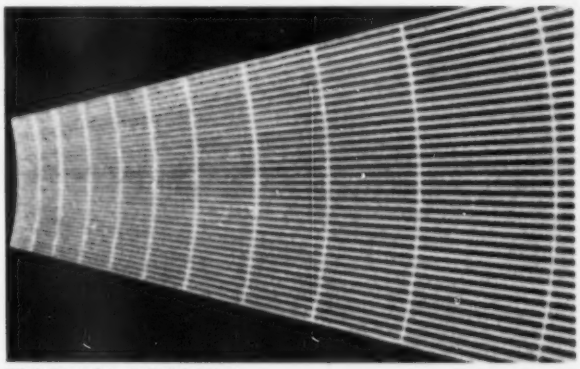
enlargement, than a thick or multi-layer emulsion. The accompanying diagram will show you why. The camera lens brings parallel rays of light from a point on the subject into sharp focus on the film plane. (Of course, we all know that even the very finest lenses aren't able to resolve a point as a point, but instead form little doughnuts called circles of confusion. Since this has no bearing on the matter at hand let's forget about it and avoid unnecessary confusion, circular or otherwise.) As we've indicated in the diagram, after the converging light rays hit the outer surface of the emulsion, they unhappily plow right on into the turbid emulsion until they bump into the anti-halation backing of the film. And, as the rays spread outward, the image point widens and becomes, in effect, enlarged. In addition to this, some of the rays scatter about in all directions, striking silver-bromide grains that weren't affected by the image pattern cast by the lens, and thereby cause these extraneous grains to become developable.

This phenomenon is called irradiation, and it occurs in thin as well as in thick emulsions. Because of the shallower depth of irradiation permitted by thin emulsions the distortion caused in thin films is considerably less than in thick emulsions. Later on we'll have more to say about the effects of exposure and development upon irradiation, but the main point is that thin emulsion films allow much less light-scatter to occur within the emulsion and are therefore capable of (*Continued on page* 114)

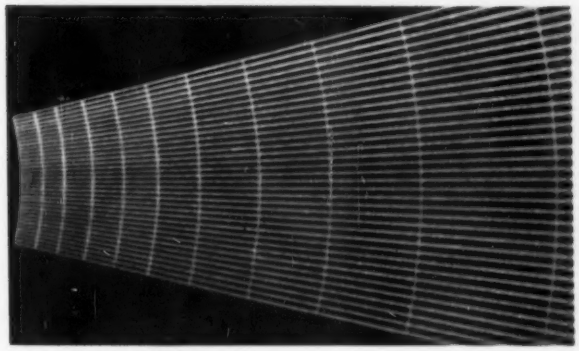
RESOLUTION COMPARED



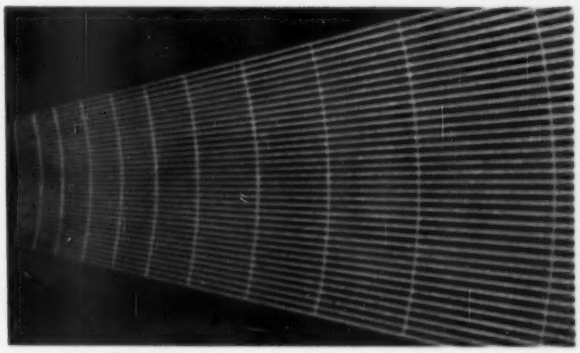
ANSCO SUPREME



KODAK PLUS-X

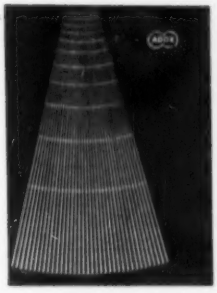


ADOX KB-17



ADOX KB-14

Enlarged section of special Adox resolution chart (right) photographed on two popular medium-speed films of standard emulsion thickness and also on two Adox thin-emulsion films shows advantage of thin-emulsion type in recording fine detail. Effective film speed for KB-14 exposure was 20; for three other films, 40—all four developed for same time in D-76. (Same differences in relative resolution occurred with other developers.)



For maximum sharpness, focus on the grain

Sharpness vs graininess: Unless grain is focused sharply in the enlarger (no matter how fine the pattern), sharpness is bound to suffer. Mushy print at right is grainless, sharply-focused image at far right is grainy.

Pictures from a reader:

Dancer Diana Dear of New York City Center Ballet company was photographed under harsh overheadlight in dressing room on tour.

Bare tree in Trinity Churchyard, in Wall Street area, becomes almost symbolic on a misty, overcast day. This shot was made with the Leica at f/3.2, with focus on the tree, so church and shrubbery blurred out.

June Duckworth

FROM TIME TO TIME, we encounter the work of a promising beginner in photography—an amateur who is hoping and working to be a professional, or one who simply likes to take the best pictures he can, for his own satisfaction. Here are pictures by one such newcomer.

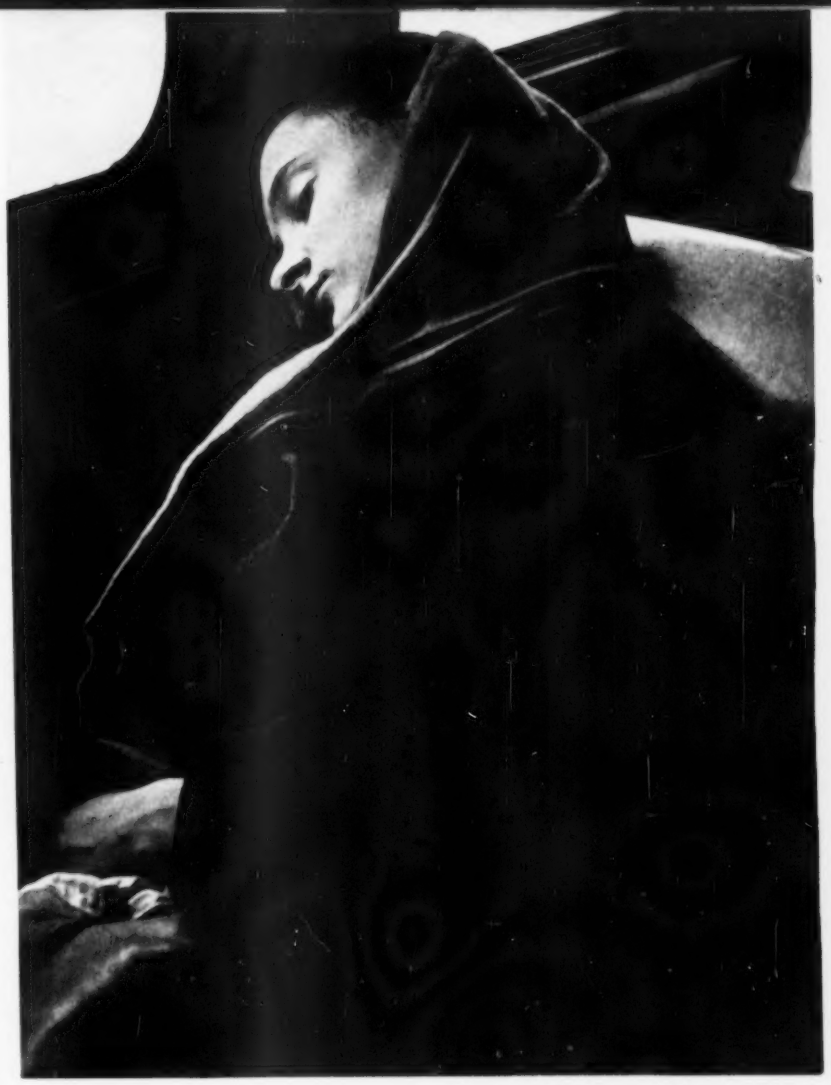
June Duckworth is a photographer's wife; her husband Paul has been a successful professional for many years. June has been taking box-camera pictures for a long time, but just a little over a year ago she began taking photography seriously, and got herself an old Leica. She wasn't exactly looking for something to keep her busy—she already had a career. June was (and still is) a bass violist with the New York City Ballet orchestra.

Paul neither discouraged her nor excessively encouraged her; she turned to photography on her own initiative, and has progressed in it at her own speed. Her husband never offers unsolicited help or advice, but he is always there when she has a question or a problem. June has, in a sense, taught herself all she knows about taking pictures.

For her, photography's greatest reward will always be the thrill and the satisfaction of creative achievement, of "getting the picture you see."

The four pictures on these pages are fairly representative of June's work. Two of them reflect the fact that her camera travels with her—to the orchestra pit at City Center and, during the tour season, across the country. The other two shots show how she reacts to the picture possibilities in her home town, the big city. She is more concerned with the particular than the general; her photographs of New York are not skyline panoramas from atop the Empire State Building, or images of vertiginous towers leaning over the cavern of Wall Street. For June, there is more of New York in the hands of one of the least of its people, or in the simplicity of a bare tree, than in all its steel-and-concrete superstructure.

All creative photography worthy of the name comes from *a way of seeing*. June Duckworth's way is one of the good ones. In just a year she has shown that her eyes are open and her camera ready; she can have a promising future.—



Catnap in a bus: June caught Diana Dear asleep in her seat during a ride between engagements of the company, and stood on seat to get this angle. Her picture story on Diana is to appear in *Dance Magazine*.

Seventh Avenue shoeshine man is typical of city's very small businessmen. He was an unwilling subject, but June was persistent. She shot at 1/30 sec, f/2.2 in early evening light, cropped to emphasize hands.

Almeria Thompson of Houston, Texas, photographed this child with the Polaroid Model 95 camera and new PolaPan 200 roll. Professor Kennedy stresses awareness of background tone values in informal situations like this, even when shooting must be rapid-fire.

Professor Kennedy got this picture during the demonstration session shown at lower left. Staff members and students from other departments at Smith often co-operate as subjects. Girl in dark blouse here is Joan Ford, an instructor in theater dance.

Smith College girls try new Polaroid

Classroom instruction in action shooting with speedlight. Girls go through the motions too.

AT SMITH COLLEGE in Northampton, Mass., there is a course in photography that doesn't include an hour's instruction in film developing or enlarger manipulation. Professor Clarence Kennedy of the Smith art department, who teaches the course, uses only the Polaroid Land cameras, and his emphasis is on esthetics—form and design, composition, lighting, tonal relationships—rather than on photographic technique. Three new Polaroid "films," just made available to the public, have been in use at Smith during the past year, and have helped to broaden the scope of the course. The new picture materials are designated as PolaPan 200, PolaPan 400, and Professional Pan 200. All are panchromatic, unlike the standard Type 41, which is orthochromatic. PolaPan 200 has an ASA speed rating of 200, twice that of Type 41, and PolaPan 400 (as one might expect) is rated at 400, which permits very successful available-light shooting when coupled with the

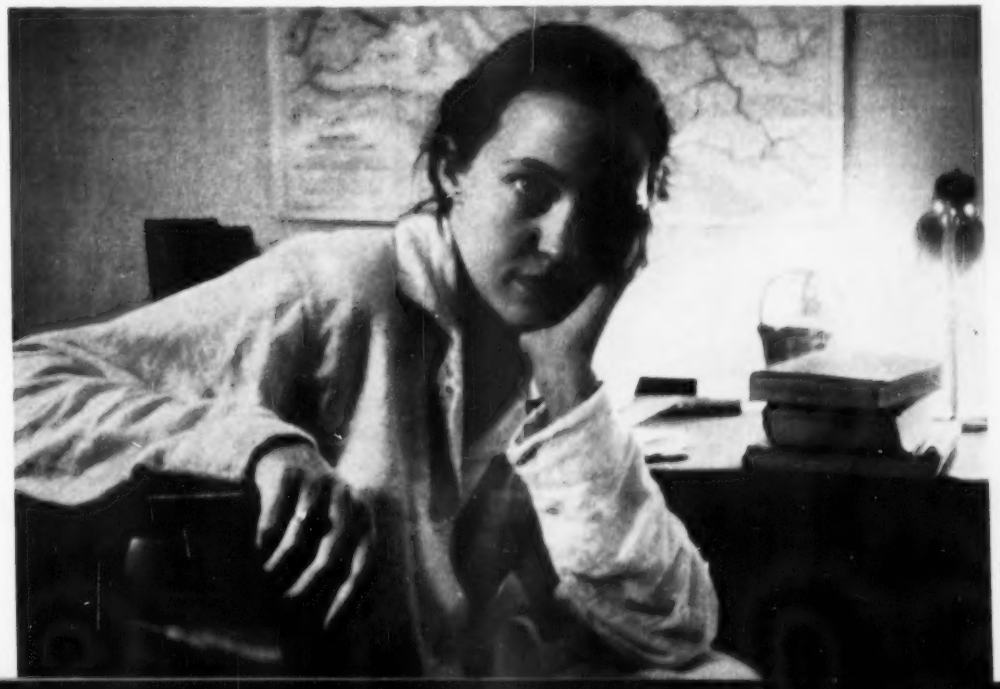
Margaret Reed of Birmingham, Mich., made this pleasant, simple composition at the window of an apartment in Greenwich Village, New York City, during a vacation there. Photography students are encouraged to take school's cameras with them if they ask.

Ruth Finch of Bloomfield, Conn., used electronic flash on a Model 95 camera and Professional Pan 200 to get an action shot of a dance student. New films offer not only added speed, but greater sharpness and more exposure latitude or "margin for error."

'films'

Faster, sharper pictures-in-a-minute help professor teach a new kind of course in photography

Virginia Rice of Easton, Pa., made a fine casual portrait of a fellow student with the conventional Type 41 emulsion. She used floodlamps skilfully to simulate natural room light, preserving the relaxed, natural feeling.



Pre-class chat: a group of the girls discuss features and operation of the Land camera.

Pathfinder's f/4.5 lens. Professional Pan 200 has been in use experimentally for a couple of years; it has a rating of 200, and the additional great advantage of an acetate-base "negative" which produces prints of exceptional sharpness and definition. It lends itself especially to professional, commercial, and industrial applications, and cases in which considerable enlargement is desired.

These three new materials make the Polaroid cameras more versatile than ever, and are expected to give a terrific boost to interest in 60-second picture-taking everywhere. At Smith, Professor Kennedy finds they make his course more valuable to more students per class hour; he can teach available-light work, high-speed action shooting, and put more emphasis on tonal values than with the previous film.

As for the Polaroid process itself as an instru- (*Continued on page* 132)

Hallway gallery: in art department corridor, best work of each girl is displayed weekly.

Josefa Simon of Washington, D. C., took a picture of these two women at railroad station and showed them the result, then made this shot as they looked at it. As often happens, second picture was better than first.

Judith Norton of Winnetka, Ill., posed another girl dramatically in a college colonnade, and used PolaPan 200 film in Model 95 camera. Professor Kennedy liked the use of strong verticals to set off subject.

Josefa Simon, who made the picture of the two women on the opposite page, applied the same outdoor portrait technique in this shot. Students have a knack for putting subjects at ease.

DAYLIGHT FILMS	
Ektachrome	**Kodachrome**
Speed index for meters calibrated by **ASA method: 32.***	Speed index for meters calibrated by **ASA method: 10.**
No tungsten index or conversion information given.	May be used with photofloods by means of No. 80-A conversion filter at speed index of 2.5.
Recommended exposure for normal subject on average bright day: 1/50 f/11	**Recommended exposure for normal subject on average bright day: 1/50 f/6.3**
Processed by user or independent laboratories.	Now processed only by E. K. Co., but procedures will be available to independent labs in future.

***Effective speed index can be increased from two to four times through special processing procedures to be outlined in a forthcoming issue.**

THAT permanent revolution which periodically pushes the effective film speed ratings of black-and-white spiraling upward has at long last moved into color photography. The speed of color film has long stood as one of the truly stable factors in a very unstable universe. Photographers grown accustomed to shooting black-and-white at speeds scraping ASA 1,000 have had to continue wearily exposing color at antediluvian indexes in daylight of 8 for Ektachrome and 10 for Kodachrome. As the old saying went: The only thing slower than color is the time it takes to get it back from the processor.

With the release of Kodak's new E-2 Ektachrome a new day dawns. This film carries a daylight rating of 32 for meters calibrated in the ASA system and is therefore rated three times faster than Kodachrome. The biggest news of all, however, is that once the individual labs get used to handling the E-2 emulsion, speeds on the order of six-to-sixteen times as fast as Kodachrome—ratings between 64 and 160—appear highly probable.

Report on the new, faster

TUNGSTEN FILMS	
Ektachrome, Type F	**Kodachrome, Type A**
Balanced for clear flash lamps, 3800 K.	Balanced for photofloods, 3400 K.
Speed given in terms of guide numbers for clear flash lamps, about two stops faster than Kodachrome with flash. May be used with photofloods by using 82-A (blue) filter, speed index of 16.	Speed index for photoflood illumination is 16; may be converted for use with clear flash lamps by using 81-C (yellow) filter.
No information as yet on converting TYPE F Ektachrome for use with daylight.	Kodachrome Type A may be converted for use in daylight by using No. 85 conversion filter and speed index of 10.

For comparative Ektachrome-Kodachrome tests see page 108

E-2 Ektachrome is now available only in 20-exposure 35-mm cartridges and 8-exposure No. 828 rolls, in two emulsions: a daylight emulsion rated at 32 and a tungsten emulsion designed for flash photography whose speed is expressed in terms of flash guide numbers.

At this writing it is, of course, much too soon for anyone to have made a final decision about all aspects of this new film. Our findings and the opinions expressed here must therefore be considered as only a preliminary report about an interesting and important new product. As further tests are made and more results have been compiled we will bring you up to date.

Because the E-2 emulsion has been given to us first in a 35-mm emulsion it is inevitable that this film should be compared to 35-mm Kodachrome rather than the old E-1 Ektachrome which was never supplied in any size smaller than the 120-620 rollfilms. Here's the way it looks to us:

The new E-2 Ektachrome has tested out warmer (*Continued on page* 112)

Warmer skin tones, richer reds in new Ektachrome, ASA 32 (far right), are evident in comparison with Kodachrome, ASA 10.

Special processing by *Life* lab made possible faster speed rating of new Ektachrome, as in this shot exposed at index of ASA 100!

Fluorescent lighting produced warm tones on Daylight Ektachrome exposed without filter for 1/30 sec, f/2, normal processing.

Bruce Downes

Dick Meek, SPORTS ILLUSTRATED

Ektachrome

By BOB SCHWALBERG

COLOR-

Joseph F. Hoover photography, Hartford

POPULAR PHOTOGRAPHY launches an exciting new series covering all aspects of color shooting today

Howard Young, exporter, San Francisco

Lois T. Beers, production stock controller, Endicott, N.Y.

Otto Bayer, librarian, Chicago

COLOR photography has expanded to epic dimensions since 1936, when Kodachrome 35-mm film first hit the market and opened vast new horizons to amateurs. In 1955 about 10 million still-camera users will take some color pictures and about three million will shoot color almost exclusively, while an estimated three million movie-camera owners will shoot the great majority of their footage on color film. This colossal and fast-growing market has been stimulated recently by the appearance of new color films and color processes, with even more revolutionary developments expected in the near future. For these reasons we have chosen this time to survey the entire field of amateur color, its tools, its materials, its techniques, and its opportunities for fun and creative satisfaction—as symbolized by the varied pictures from our readers on these pages. Our new series of detailed, instructional articles begins this month with the basic problem of how to choose a camera for color photography. Next month we'll bring you up-to-date information about color films and clarify some of the confusion caused by recent developments. Later on there'll be articles about filters, exposure, lighting, landscapes, still lifes, portraits, processing, slide projectors—in short, a comprehensive course to help you get the utmost satisfaction from your color photography no matter what your interests or equipment.—▶

What camera for color? Turn the page.

By NORMAN ROTHSCHILD

CAMERAS FOR COLOR

First of a new color series

35-mm

Low cost and convenience have made 35-mm color extremely popular. The primary purpose to which 35-mm transparencies are put is projection. The 2x2-inch mounts in which processing labs

Arthur M. Rapoport, Bridgeton, N. J.

828

Bantam-type or 828 film comes in eight-exposure rolls and produces pictures that are slightly larger than those made with 35-mm. However, these are returned from

Jerome Kling, Ft. Lauderdale, Fla.

roll-film

The 120 or 620 roll-film size is preferred by those who wish to view transparencies without benefit of projection. For such a purpose, this size is adequate yet not too costly. Projectors are available for 2¼x2¼ transparencies also. They are somewhat more expensive than projectors for 35-mm and 828 slides, but the cost is not prohibitive. If you own both a

Donald Schlossel, New York

press and view

Sheet color film is considerably higher priced than 35-mm or roll film. This expense may be offset by the fact that you can shoot and process individual transparencies without waiting to finish an entire roll of film. No easily portable "home-type" projectors are available for color slides larger than 2¼x2¼, but large auditorium projectors are offered which project sheet-film transparencies in

Aldo P. Russo, San Mateo, Calif.

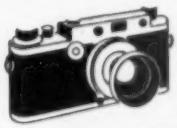
What camera for color? Turn the page.

By NORMAN ROTHSCHILD

cameras . . . low-cost color slides for projection

return the film fit any standard 35-mm projector. The mounts also make handling and filing easier. For extra protection, slides may be mounted between glass. Color prints and enlargements can be ordered from these transparencies.

without rangefinder



with rangefinder

with interchangeable lenses

single-lens reflex

cameras . . . color slides from eight-exposure loadings

processing in the same size (2x2) mounts as 35-mm slides and fit the same projectors. The short rolls are a convenience if you don't have occasion to shoot a 20- or 36-exposure roll within a reasonable length of time. Also there's less danger of quality deteriorating because of excessively long storage in the camera while you're waiting to finish the balance of a roll. Many 2¼x2¼ and some 2¼x3¼ roll-film cameras can be equipped with an 828 adapter.

828

cameras . . . choice of color negatives or transparencies

35-mm and 2¼x2¼ camera, adapters permit the projection of both kinds of slides by the larger machine. The 2¼x2¼ transparencies usually are returned unmounted from processing, but various cardboard, glass, and metal mounts are available. Color prints can be made from 2¼x2¼ transparencies, or color-negative-type film can be used. The latter cannot be projected, but yields low-cost prints.

non-adjustable

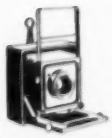
folding

twin-lens reflex

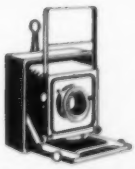
helical-tube focusing

cameras . . . for professional size transparencies

sizes up to about 3¼x4¼ inches, and special machines can be ordered for showing 4x5 and larger slides. Of course, most of these projectors are rather costly. The 4x5-inch size is generally considered the minimum for commercial use where extreme sharpness and high technical quality is needed. Various types of color prints are available from sheet transparencies, and one color-negative-type film is available.



small press-type



large press-type

view

large single-lens reflex

Turn the page for details on the camera types listed above

35-mm CAMERAS FOR COLOR

without rangefinders

The chief feature of 35-mm cameras without rangefinder is their relatively low cost. Besides being suitable for people on a limited budget, they also will appeal to anyone who wants an extra camera for color. Focusing is done by guessing the distance and then setting the lens. When really accurate focusing is necessary, as for close-ups, a tape measure or accessory rangefinder is recommended. Both rigid body and folding-bellows type of construction are available in this camera type.

with rangefinder

A coupled rangefinder enables you to focus quickly and accurately by aligning two out-of-register images or two halves of a split image. This feature is especially valuable for color work, which often requires wide apertures with correspondingly small depth of field. Some models have rangefinder and viewfinder separate. Another arrangement is to have them combined so that you need to look through only one optical eyepiece. Most medium-priced 35-mm cameras today have a coupled rangefinder.

with interchangeable lenses

Once a color transparency is exposed there's not much that can be done to crop it or improve its composition. However, interchangeable lenses—a feature of the more expensive 35-mm cameras—permit you to do your cropping right in the camera. Long-focus and telephoto lenses produce larger images, include less area, and tend to flatten perspective more than do normal lenses. Wide-angle lenses produce smaller images, include more area, and are used to exaggerate perspective more than normal lenses.

ROLL-FILM CAMERAS FOR COLOR

non-adjustable

Even simple fixed-focus, fixed-exposure cameras can be used for color, if you load up with Kodacolor or Ektacolor—fast color-negative films that yield color prints and enlargements at low cost, but do *not* produce color slides for projection. Non-adjustable cameras are manufactured in many body designs: with box-type body; with folding bellows construction; and with an extra-large, bright viewing screen on top of the camera similar to the groundglass of twin-lens-reflex designs.

folding

Folding cameras are small enough to be carried and stored conveniently, yet produce transparencies large enough to be viewed without projection. Many models make 2¼x3¼ pictures which can be cut down to produce 2¼x2¼ transparencies for projection in standard 2¼x2¼ projectors. Of course, folding cameras are well suited to Kodacolor, also. Models with and without rangefinder are available, and lenses as fast as *f*/2.8 are supplied on some makes. Some can be adapted to 828 film.

helical-tube focusing

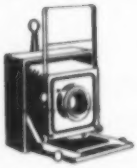
This type of roll-film camera features extreme rigidity of construction at the sacrifice of some compactness and lightness of weight. The lens is mounted in a metal tube which moves in and out for focusing. Jars, vibration, and rough handling are less likely to upset the alignment of the lens than is true with bellows-type folding cameras. Many current models incorporate coupled rangefinders, automatic film transport, and have *f*/3.5 lenses. Some can be adapted to take 828-size film.

PRESS AND VIEW CAMERAS FOR COLOR

small press-type

The versatile 2¼x3¼ press-type camera is designed primarily to use sheet film and film packs but can be adapted quickly to roll film. It combines relatively light weight and small size with typical press-camera features including interchangeable lenses, long bellows extension for copying and close-up work, and a choice of groundglass, optical viewfinder, and sportsfinder focusing and viewing. Most models also include a limited number of distortion controls to correct errors in perspective.

large press-type



Larger versions of press-type cameras include the same features described in the paragraph on small press-type cameras. In addition, they may also have more elaborate distortion controls, and a fast focal-plane shutter as well as a between-the-lens type. They are available in 3¼x4¼, 4x5, and 5x7 sizes, with the 4x5 size being standard for press and professional use. The high cost of sheet color film limits their use as a color camera for most amateurs unless a roll-film adapter is used.

view cameras

View cameras are made in three professional sizes: 4x5, 5x7, and 8x10. All have interchangeable lenses. Focusing and composing are done on a groundglass. The various swings and tilts with which these cameras are equipped allow considerable control over perspective. Adapter backs are available to allow use of 3¼x4¼ and 2¼x3¼ sheet film as well as 120 rollfilm. These are big, heavy cameras designed for use on a tripod. They are employed for commercial, fashion, and other color work in a studio.

Turn the page for details on the camera types listed above

Here's some general information to help you pick the best camera for your color needs

single-lens reflex

In this type of camera the image from the taking lens is reflected by a 45-degree mirror to a groundglass viewing screen where focusing and composing can be done directly by inspection. Most cameras of this type have interchangeable lenses. No matter which lens is placed on the camera, the groundglass shows exactly what will be in the picture. Some types are designed for use at eye level with a prism eyepiece, others for waist-level operation. Accessory prisms are available for the latter.

twin lens reflex

These popular 2¼x2¼ roll-film cameras offer focusing and composing on a groundglass which shows an image which is practically identical to the film image. Most twin-lens reflexes have an *f*/3.5 lens but a few sport *f*/2.8's. Both sheet, 828, and 35-mm adapters are available for some makes, thus vastly increasing the camera's versatility as a color camera. The more expensive models are equipped with automatic film-stopping and shutter-cocking devices for very rapid, easy shooting.

large single-lens reflex

These cameras are similar to miniature models of this type, and focusing and composing are done in a like manner. All models currently on the market are waist-level operated and have interchangeable lenses. Both 3¼x4¼ and 4x5 models are available. They also can be equipped with adapters for color roll film. The large single-lens reflex camera often is used by professionals for pictures of children, portraiture, and when fitted with a telephoto lens, for sport and nature photography.

TODAY, ANY CAMERA that will take good black-and-white pictures will also take good pictures in color. However, in choosing a camera for color shooting, there are some special points to consider. First, and perhaps most important, you must decide what you want primarily—color slides for projection or color prints. If slides are your goal, obviously a 35-mm or 828-size camera is your best bet, although you can buy 35-mm or 828 adapters for many types of roll-film and press cameras. The 2¼x2¼ transparencies produced by many roll-film cameras can be mounted for projection, but the cost per exposure and the initial price of the projector are higher than for standard 2x2-inch slides. If you primarily want color prints, a roll-film camera is the obvious choice, allowing you to use low-cost color-negative material. Color prints and enlargements can be made from transparencies but the cost per print is higher than with Kodacolor and Ektacolor.

Within each type of camera discussed on the foregoing pages you'll find much variation in price. (See the 1955 PHOTOGRAPHY DIRECTORY for a complete listing and detailed information on all makes of cameras.) This variation is generally due to differences in lens and shutter equipment and the number of special features each camera incorporates.

Cameras with fast lenses and multi-speed shutters and with automatic film-stop mechanisms naturally are higher in price than are the same cameras with slow lenses of equal quality, simple shutters, and manual winding of film.

For an all-around color camera you'll need an *f*/6.3 or faster lens. Non-adjustable cameras with slow *f*/11-*f*/16 lenses can be used only with fast color-negative emulsions like Kodacolor. *(Note: Kodak's new high-speed Ektachrome is fast enough to be used with a slow lens but as yet is available in 35-mm and 828-sizes only, not as a roll film. Standard Ektachrome roll film requires an f/6.3 or faster lens. See the report on the new high-speed Ektachrome also in this issue.)*

Most modern camera lenses are coated and color-corrected to produce good results with color film.

Because color films are generally slower than black-and-white, you may want to own as fast a lens as possible. If you do buy a high-speed lens, say an *f*/2 or even an *f*/1.4, remember that these lenses have a very limited depth of field when used wide open. They must be focused accurately. A coupled rangefinder or groundglass focusing is highly recommended.

If you're going to buy a camera for some specialized work, check with the camera maker or importer or consult a reliable dealer for information regarding lens choice and available accessories.

Many fast lenses are offered at "bargain" prices in competition with slower lenses *(Continued on page 124)*

Courtesy Redbook Magazine

Illustrator's camera

Comparison shows how Smith bases painting on a photograph. Note how he takes artistic liberty with some of the minor details.

Magazine artist J. Frederick Smith uses a camera to help him with drawings and paintings—and his photographs are as good as his brushwork

Courtesy Cannon Mills, Inc.

For stocking advertisement, Smith first made the photograph at top. Artists often work from photographs to save time and fees, and insure exactly the desired pose and treatment.

AMERICA'S TOP MAGAZINE illustrators—the men who do the paintings and drawings that decorate the covers and enhance the stories and articles in the big magazines—find an important place in their work for photography. A great many of these artists use photographs as a basis for their illustrations, sometimes closely following them for detail, sometimes taking broad liberties with them for the sake of glamour and drama. One of the big names in the field is J. Frederick Smith, whose credit line you've probably seen many times in the slick magazines. He too relies on photography as a tool of his trade, and unlike most illustrators, he shoots his own pictures, rather than merely supervising them. He is more than competent with the camera; his photographs are as excellent as the finished art work they inspire.

A typical illustration evolves like this: A magazine tells him what it wants, in

Courtesy Fawcett Publications, Inc.

Fiction illustration, above, grew from the carefully planned and well-executed photo at left, chosen from many he shot.

Wholesome sex-appeal demanded by slick magazines is a Smith specialty. Here he added a parakeet, drawn from life.

Courtesy Collier's Magazine

some detail. He hires a model, usually from a list of those he has worked with before, and whom he can count on for the response he needs. The model must be able to "put herself into a role" like an actress, if the result is to be natural and spontaneous. With the details arranged, Smith comes into New York from his home in Westchester, and sets up in a studio where he rents space. Props and lighting are determined by his "artist's inner eye," a kind of prevision of what he wants in the finished product. He tells the model what he has in mind, and starts shooting.

In a couple of hours, he exposes five or six rolls of film in his Rolleiflex, and calls it a day. (If he were sketching with pencil and pad, or trying to do the finished job from life, it might take him a couple of days to get just what he wanted—and he'd be working under pressure all the time.) He has the film processed and contact-printed; then he studies the contacts carefully, choosing those which come closest to his conception. Then he puts selected contact prints in an opaque projector, enlarging the images to the size and format of the finished art work, to see if "everything fits." When he has picked the one that pleases him most, he has several 11x14 enlargements made, in varying degrees of contrast and intensity, so he can work from a wider range of tonal values than he could get (*Continued on page* 131)

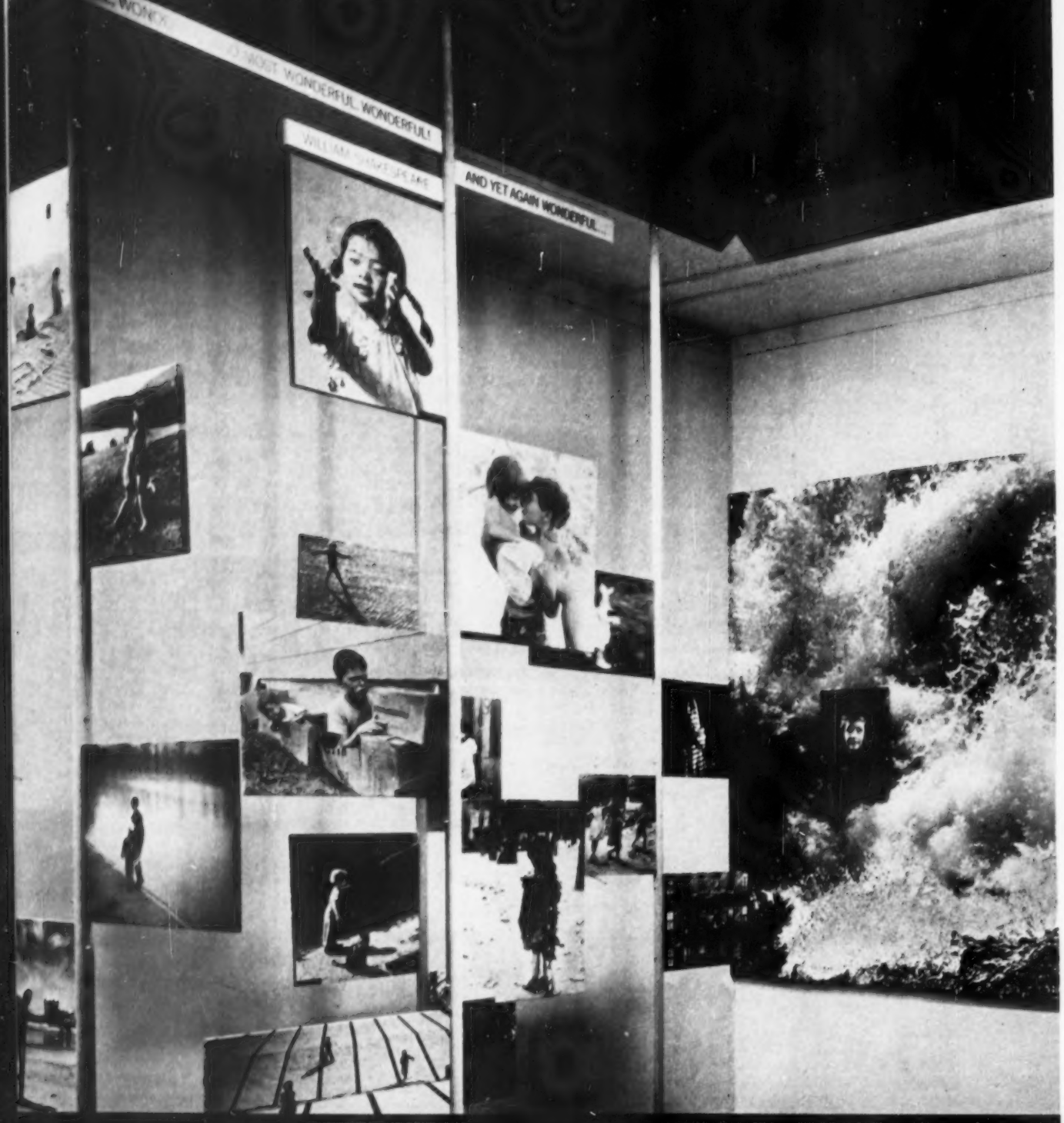
This is what you see as you enter the exhibit, which occupies the entire second floor of the museum. Foreground photos are dramatically displayed against transparent wall.

THE FAMILY OF MAN

Photographs of exhibit by Lionel Freedman

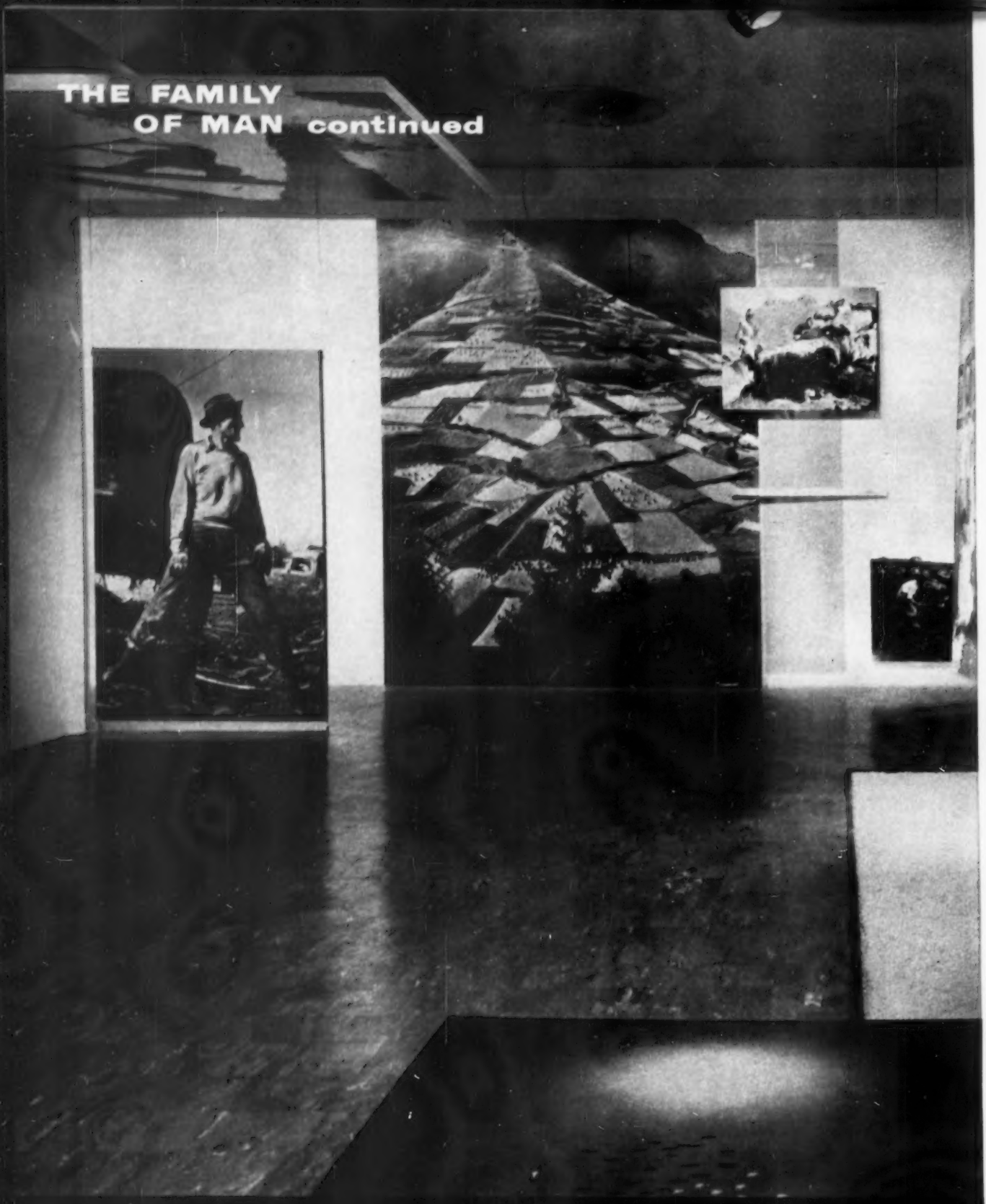
No photographic exhibit has ever created such excitement and controversy as Edward Steichen's mammoth, history-making show now at the Museum of Modern Art. The 500-odd pictures have been assembled with such spectacular effect that we wish all our readers could see it. In lieu of actually being there, we hope the following views will convey an impression of what the exhibit is like and show some of the things a visitor sees as he wanders through *The Family of Man*.

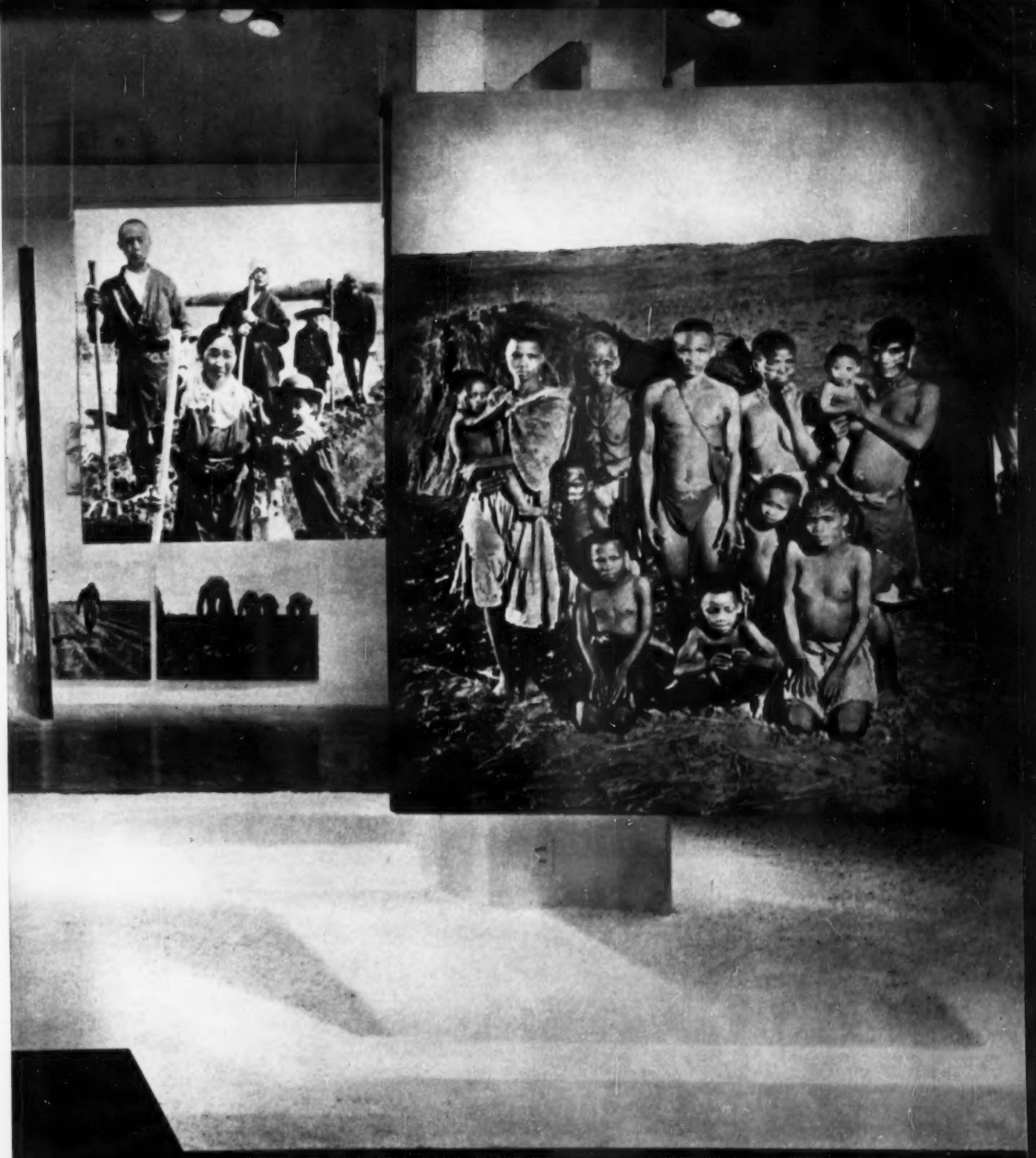
THE FAMILY OF MAN continued



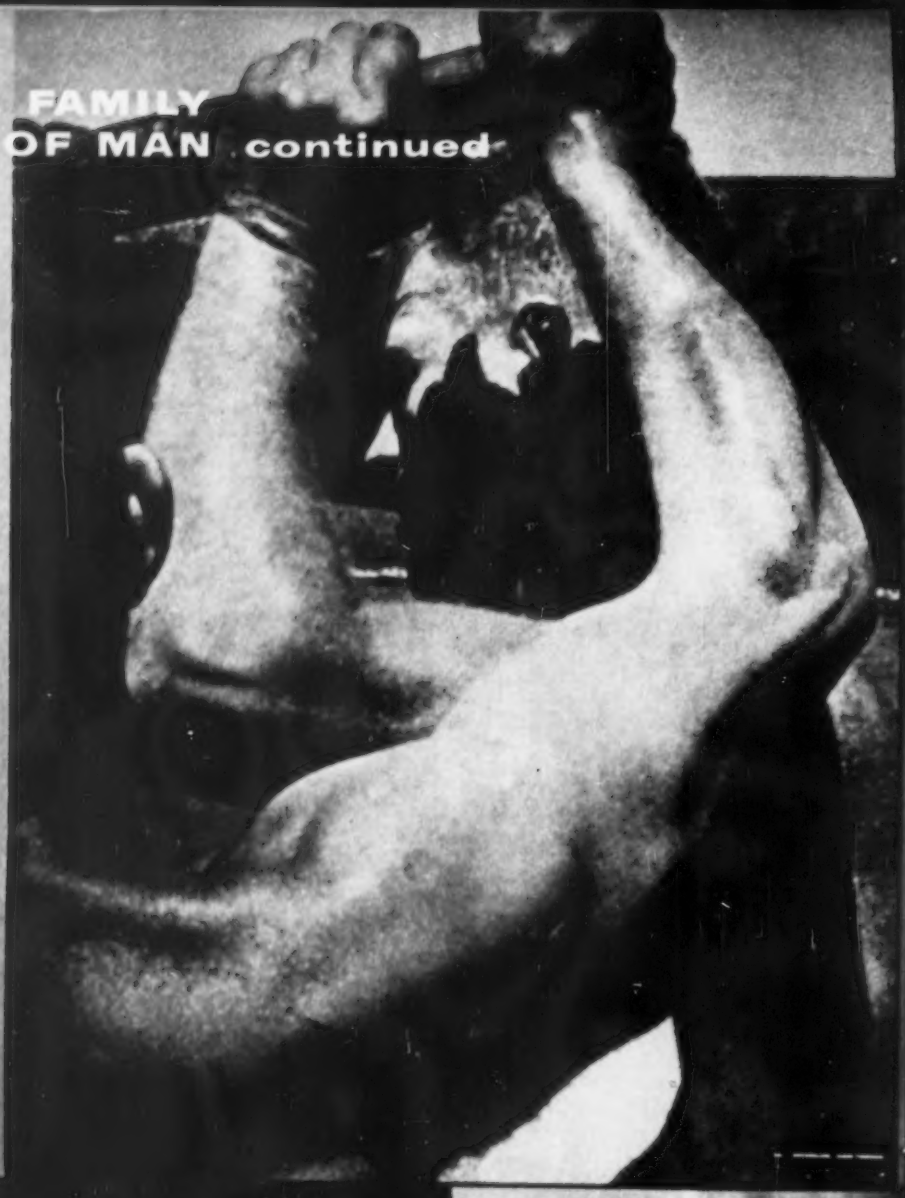
Mounting photographs on vertical poles is unconventional display method used in children's section. Airy, free-flowing design enhances the mood set by the pictures.

THE FAMILY OF MAN continued





Family groups from different lands, displayed on hanging panels, form the heart of the exhibition. Note also picture on floor, foreground, and on ceiling, rear left.



A giant, recessed wall mural, rear right, and a photograph of muscular laborers, jutting at right angles from wall at left, keynote group of pictures on work.

Curved room dividers are used to isolate wall displays from center passageway.

Startling innovations in display lend variety to the exhibit, add impact to the pictures

"OVERWHELMING" is the best way to describe most people's first impression as they walk through *The Family of Man*, Edward Steichen's latest and much-publicized photographic exhibit on display now and through May 8 at Manhattan's Museum of Modern Art. The show is gargantuan in every respect: in number of pictures—more than 500 selected from about two million viewed during the past two years; in size—the exhibit fills the museum's entire second floor; and in theme—nothing less than the universal humanity of all mankind. Add to this a dazzling array of display techniques and you have a unique achievement in the history of photographic exhibits, a show that will be praised, damned, criticized, and discussed for a long time to come.

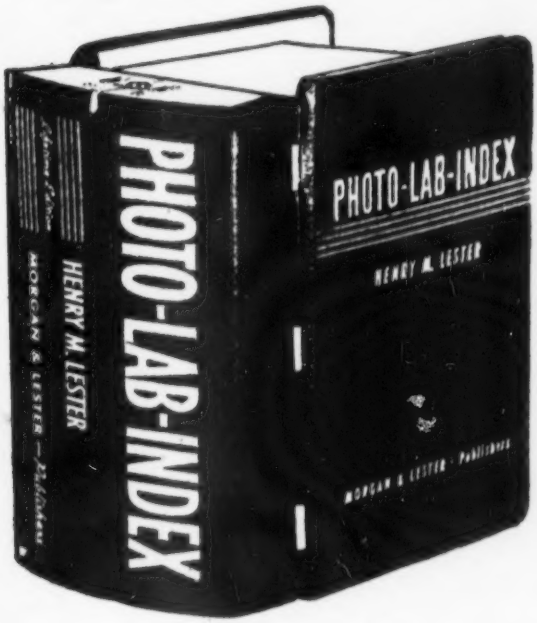
To cover such an exhibit adequately within a few magazine pages is an impossible task. Instead, POPULAR PHOTOGRAPHY devotes the preceding eight pages to interior views of the show in hopes they will convey something of its spirit, and urges you to see *The Family of Man* for yourself if you're in or around New York during the next month. A traveling version and itinerary are planned, but details are not complete at the time of this writing.

After the (*Continued on page* 147)

PHOTO DATA SECTION

USEFUL CHARTS AND TABLES

from the



We are privileged to present in this special section a useful set of charts, tables, and other practical photographic data which can go a long way in solving your exposure, processing, picture viewing, and projection problems.

This material has been abstracted from Morgan & Lester's famous **Photo-Lab-Index** along with capsule summaries of the Introduction and 24 numbered sections of this unique photographic encyclopedia, by permission of its copyright proprietors and publishers.*

The **Photo-Lab-Index** is described by its editors, Henry M. Lester and John S. Carroll, as "a collection of recommended photographic procedures in a standardized form and in a self-perpetuating edition." It is, in effect, an up-to-date handbook covering almost every expendable photographic material currently available—augmented by authentic information on equipment and its applications culled from standard photographic references and current scientific literature.

Comprising some 1,400 loose-leaf pages in a special six-prong binder, its content is continually kept up-to-date by a Quarterly Supplement service, available on an annual subscription basis. Each Supplement consists of 64 to 128 new and replacement pages intended for insertion in the basic loose-leaf set.

Since the first edition of the **Photo-Lab-Index** appeared in June, 1939, about 100,000 volumes have been acquired by individuals, organizations, photographic studios, laboratories, and libraries throughout the world. Through the years, its value has been directly proportional to the user's familiarity with the functional and standardized arrangement of its content, which the following summary is also intended to clarify.

* Published by Morgan & Lester, 101 Park Avenue, New York 17, N. Y. Copyright (c) 1939 through 1954, Morgan & Lester. 14th Lifetime Edition, $17.95; Quarterly Supplements, $3.00 per year.

THE PHOTO-LAB-INDEX SECTIONAL HEADINGS ARE AS FOLLOWS:

1—Ansco (processing recommendations)
2—Ilford (processing recommendations)
3—Gevaert (processing recommendations)
4—Special Films (processing recommendations)
5—Du Pont (processing recommendations)
6—Eastman Kodak (processing recommendations)
7—Haloid (processing recommendations)
8—Film Data
9—Filter Data
10—Illumination
11—Photo Papers
12—Miscellany, Weights, Measures, Conversions
13—Photographic Chemicals
14—Cine Data
15—Darkroom
16—Color Data
17—Photographic Optics
18—Defects in Negatives and Prints
19—Transparencies and Slides
20—Copying
21—Photomechanical Processes
22—Bibliography
23—Photo-Words
24—Television

INTRODUCTION

This is one of the most important sections of the **Photo-Lab-Index** inasmuch as it explains the organization of the entire volume, the content of the various sections, and the manner in which the quarterly supplements are used to keep the volume up-to-date. It represents a "style sheet" and a set of "ground rules" in a concise 24-page unit.

The introductory section closes with a General (alphabetical) Index to the entire **Photo-Lab-Index.** As each new quarterly supplement appears new pages are supplied as a supplement to the General Index to account for the pages that are added and removed. The General Index is completely revised with the issuance of the fourth and final supplement for each year.

SECTIONS 1 THROUGH 7 (Except 4)

RECOMMENDED PROCESSING DATA

Six of the first seven numbered sections of the **Photo-Lab-Index** are devoted to the processing formulas and methods recommended by the six leading film and paper manufacturers for the finishing of their respective sensitized materials. A full section is given over to each firm—Ansco, Ilford, Gevaert, Du Pont, Eastman Kodak, and Haloid in order.

In each section, we find the manufacturer's developer formulas (along with related replenishers) with mixing and general processing instructions for each. Following each general-purpose formula are time-gamma-temperature charts for developing the various films made by the manufacturer in that formula. Charts for the use of the manufacturer's proprietary developers are also included.

Development data is followed by formulas for fixers, stop baths, hardeners, and miscellaneous solutions such as reducers, intensifiers, toners, stain removers, tray cleaners, and ferrotype polishes. (Since Haloid makes no films, Section 7 omits time-gamma-temperature information.)

Introductions and supplements to the various manufacturers' sections include a wealth of useful processing information in text as well as chart form. Included are data on such subjects as: how the developing chemicals work; exhaustion and replenishment of developers; trouble-free chemical mixing; high-temperature processing; rapid film processing; keeping times of mixed solutions; fine-grain theory, etc.

see table 15

SECTION 4

SPECIAL FILMS

This section is devoted to processing data for special sensitized materials from smaller manufacturers whose lines aren't large enough to warrant a complete section. The only material now in the section is on the Adox thin-emulsion film line made by C. Schleussner in Germany and imported by E. Leitz, Inc., New York—Adox KB-14, KB-17, and KB-21. Films of other makes will follow as they become available here.

Although the developers listed for use with Adox, for which time-gamma-temperature charts are given, are neither formulated nor manufactured by Schleussner, it is not to be assumed that Section 4 will become a catch-all for "non-recommended" formulas. Each formula or proprietary developer listed under Adox film is one that is recommended by the film manufacturer—the time-gamma-temperature charts having been plotted and compiled by Schleussner.

SECTION 8

FILM DATA

Descriptions and performance characteristics of all the black-and-white films and plates marketed in the United States by Ansco, Du Pont, Gevaert, Ilford, and Kodak are incorporated in this section. The data, much of it in summary table form, includes: exposure indexes and film speeds in a variety of speed-rating systems, recommended developers and developing times, safelight information, sheet-film notching codes, and speed ratings for copying.

Additional information is given on hypersensitizing films and incident-light measurement for exposure determination. There is also a great deal of useful data on comparative film speed and exposure index ratings that permits practically every exposure meter in use today, no matter how calibrated, to be used with all available films.

see table 1

SECTION 9

FILTER DATA

"USE NO FILTER UNLESS YOU NEED IT!" is the sage advice of the **Photo-Lab-Index** editors which prefaces this section. But if you must . . . a complete set of reference data and working instructions on

filter selection and use in black-and-white photography will be found here. There is also information on the special filters used for making prints on Varigam and similar variable-contrast papers.

Wedge spectrograms, film-sensitivity classifications, and an exhaustive compilation of daylight and tungsten filter factors is included for the black-and-white films made by the five major manufacturers in conjunction with filters with the following brand names: Argus, Leitz, Optochrom, Harrison & Harrison, Lifa, Wratten, Zeiss, Ilford, Rolleiflex, Fish-Schurman, Goerz Panortho, Omag, Agfa Tricolor, and Utilo. A unique feature of this section is an exhaustive table of Harrison filters for black-and-white photography in which their functions, specific applications, exposure factors, and relationship to Wratten filters are listed.

Color compensating filters recommended by Kodak for use with Kodak Color Films are also covered here.

SECTION 10

ILLUMINATION

This section covers all of the artificial light sources used in picture making, processing, and viewing and projection, from the standpoints of their construction and operating characteristics as well as their applications. Photoflood and studio lamps, photoflash bulbs, electronic flash units, projection lamps, safelights, and sound-projector exciter lamps are among the universe of sources covered.

Miscellaneous electrical information, including wiring diagrams for photofloods, is also offered. A unique glossary of illuminating engineering terms entitled *Illuminating Engineering Nomenclature and Photometric Standards* concludes the section.

see tables 2, 4

SECTION 11

PHOTO PAPERS

Descriptions and charts of available surfaces, weights, and contrast grades for all papers made by Ansco, Du Pont, Gevaert, Ilford, Kodak, and Haloid, are included here.

Each section, with the exception of Gevaert and Ilford, lists information about paper speed, exposure scale and contrast, and safelight information, plus short discussions on print processing and toning.

There is also supplementary information on paper-negative making and print mounting.

see table 5

SECTION 12

MISCELLANY, WEIGHTS, MEASURES, CONVERSIONS

This portion deals largely with conversion of metric to U.S. and U.S. to metric measure, both liquid and solid; also with the relationship between Centigrade and Fahrenheit temperature scales.

Information is given on dilutions of acetic acid and other solutions,

Formulas are given in the latter part of the section for: film cleaners, combined cleaner-moisteners, dead-black paints, sensitizing solutions for paper cloth and wood, ammonium thiosulfate fixing baths, and low-temperature processing solutions (with associated data).

see tables 3, 6, 7

SECTION 13

PHOTOGRAPHIC CHEMICALS

All the chemicals commonly used in photography are listed here—with their correct terminology, synonyms, formulas, miscibility, grades available (USP, CP, NF, Tech, etc.) and a description of their uses in photography. Antidotes are also given in many instances.

Here are typical examples:

POTASSIUM IODIDE—Synonym: Iodide of Potash.
Formula: KI. Mol. wt.: 166.03. White crystals, granules or powder; very soluble in water; soluble in alcohol; slightly soluble in ether.
Common Grades: U.S.P. XI.
Uses: In preparation of mercuric iodide intensifier; in emulsion making; has property of reducing emulsion fog, dissolving iodine; in iodine mordant solutions for dye toning.

SILICA GEL: see: Silicic Acid.

SILICIC ACID: Synonym: Precipitated Silica.
Formula: Approximately H_2SiO_3, possibly $SiO_2 \cdot H_2O$. Mol. wt.: 78.08. White amorphous powder, insoluble in water or acids except hydrofluoric or hot fixed-alkali hydroxide solutions.
Uses: Silica Gel is a precipitated silicic acid in the form of lustrous granules, specially prepared and adapted for absorption of various vapors, particularly water vapor. See PHOTO-LAB-INDEX No. 12-M-38, page 12-17.
It is also sold in the form of small spheres, known as S/V Sovabead. See PHOTO-LAB-INDEX No. 12-M-38a, page 12-18.

There is a table of solubilities and a listing of organic chemicals used in color photography at the end of the section.

SECTION 14

CINE DATA

Although this section is devoted almost entirely to the materials, equipment, and techniques of the professional motion-picture worker, it is studded with many useful facts for the proficient amateur. It opens with a description of the films offered for professional movie making by Ansco, Du Pont, Gevaert, Ilford, and Kodak. These include negative, positive, sound recording, duplicating, and color films in both 16-mm and 35-mm widths.

This listing is followed by data on specialized types of black-and-white films made by Ansco, Du Pont, and Kodak—including information on exposing and handling professional color films and reversal processing of black-and-white films.

Complete optical data, ASA standards for professional motion-picture equipment and a complete list of terms used in studios and processing laboratories follow this.

see tables 9, 10

SECTION 15

DARKROOM

This gives complete information on constructing darkrooms almost anywhere including small homes or apartments.

Diagrams and specifications are shown for regular and special types of darkrooms. In the special group are those used for X-ray, color processing, and hospital requirements.

There are tables of material suitable for constructing processing apparatus. Ventilation, water supply, and temperature control are also covered.

SECTION 16

COLOR DATA

This section has complete data and processing instructions, wherever applicable, for Ansco, Ilford, Kodak, and Dufay color films.

There is information on color-separation negatives and masking; the making of color prints by the Printon, Ektacolor, Dye-Transfer, Carbro, Flexichrome, and McGraw Pigment processes; color-temperature tables and a discussion of filters for color photography—including light-balancing, color-compensating, and conversion types.

There are formulas for the use of dye-coupling developers in color and monochrome printing, and also information on making black-and-white prints from transparencies.

see table 11

SECTION 17

PHOTOGRAPHIC OPTICS

Here is a collection of optical formulas and facts about lenses—their characteristics and applications—which are of practical value in shooting, enlarging, and projecting pictures. The formulas cover problems met in everyday practice: lens-to-subject and subject-to-image distance relationships; depth-of-field and hyperfocal-distance determinations; supplementary-lens calculations; focal-length determinations; focusing-scale calibrations, and motion stopping under a variety of shooting conditions.

Other subjects covered by means of formulas, text, and tables are: perspective control, view-camera movements, enlarging controls, lens-resolution tests, and the use of spectacle lenses as supplementaries. The section concludes with an exhaustive treatment and tabulation of Kodak Combination Lens Attachments, plus charts of lens-mount diameters and adapter-ring sizes for an extremely wide variety of cameras.

see tables 8, 12, 13

SECTION 18

DEFECTS IN NEGATIVES AND PRINTS

All the mishaps that can befall the black-and-white negative and print in the course of exposure or processing are catalogued and discussed here in terms of description, cause, prevention, and remedy. Salvaging procedures are given for negatives, but not for prints. Defects in ferrotyped glossy prints are specially treated.

A tabulation of defects arising from the improper handling and processing of Ansco Color, Ektachrome, Ektacolor, and Kodacolor films rounds out the section.

see table 14

SECTION 19

TRANSPARENCIES AND SLIDES

Here, we find a roundup of all the sensitized materials and equipment used in preparing black-and-white lantern slides and miniature transparencies for projection. There is data on exposure, processing, finishing, mounting, masking, tinting, and toning of monochrome transparencies, as well as of large display transparencies on Du Pont Adlux and Kodak Translite materials. Filmstrip preparation gets special treatment.

Slide masking and projection data supplements the foregoing information.

SECTION 20

COPYING

The sensitized materials, equipment, and techniques required for making faithful reproductions of negatives, line copy, and continuous-tone prints and other copy with a wide variety of camera equipment, are included in this section. The data includes such factors as the resolving power of suitable negative films; exposure; meter settings; supplementary lenses; infrared- and ultraviolet-subject lighting, and reflection control. Reflex copying techniques and office reproduction equipment are also included.

Prefacing the section is a listing and discussion of subject matter that can't be copied or reproduced for legal reasons.

SECTION 21

PHOTOMECHANICAL PROCESSES

All the photographic materials employed in bringing the picture image to the printed page by photoengraving, photolithography, photogravure, and planography are listed and described in this section. The specific products of Ansco, Du Pont, Gevaert, Ilford, Hammer, and Eastman Kodak are covered. There is also information on silk-screen stencil making with Autotype, Colorgraph, and Kodak Ektagraph materials.

Other data in the section has to do with half-tone screen distances; screen angles for color work; half-tone dot etching; sensitizing and etching metal and paper press plates, and the wet-plate process.

SECTION 22

BIBLIOGRAPHY

Presented here are 3,000 references to books, periodicals, pamphlets, and monographs, which in turn offer more than 100,000 additional references. These are offered under approximately 1,000 subject headings arranged alphabetically.

SECTION 23

PHOTO-WORDS

Listed alphabetically are the common terms used in photography, along with their definitions.

Excluded from this listing are terms pertaining to movies, photographic chemicals and illumination—these being covered in detail in Sections 14, 10, and 13 respectively.

A listing of abbreviations used in photography is also included. This takes in both photographic terms and abbreviations for leading photographic organizations. (Slang terms or expressions of local jargon have not been included.)

SECTION 24

TELEVISION

This section contains material for the photographer who has to take or prepare photographs, both still and movie, for television broadcast. The data is essentially professional in nature, none of it primarily applicable for amateur use.

Included are data on film sizes and field areas for TV films and cameras; processing of film for video broadcast; photographic quality control for best transmission value; transfer from film to television signal; quality of image transmission from motion picture films; films from television sources—Kinescope photography; exposures, illumination levels, and daylight exposure tables for Image Orthicon Cameras; and a table of field areas for various lenses used on Image Orthicon cameras.

1. EMULSION-SPEED SYSTEMS COMPARED

WARNING: Different systems of Film Speed Ratings use different criteria by which to rate the "speed" of the film. Therefore, there is no real numerical correlation between systems and any such table is necessarily approximate.

In the case of the H&D and DIN ratings given below, different sources give widely varying values for films of the same ASA or BSI speed. These ratings, therefore, must be used within the limitations given in the notes below the table.

Weston	†ASA Exposure Index BSI Arithmetic	BSI Logarithmic (Scheiner*)	DIN (See Note 1)	H&D (See Note 2)
—	1	11°	4/10	60
1	1.2	12°	5/10	76
1.2	1.5	13°	6/10	96
1.5	2	14°	7/10	120
2	2.5	15°	8/10	150
2.5	3	16°	9/10	190
3	4	17°	10/10	240
4	5	18°	11/10	300
5	6	19°	12/10	375
6	8	20°	13/10	480
8	10	21°	14/10	600
10	12	22°	15/10	750
12	16	23°	16/10	960
16	20	24°	17/10	1,200
20	24	25°	18/10	1,500
24	32	26°	19/10	1,900
32	40	27°	20/10	2,400
40	50	28°	21/10	3,000
50	64	29°	22/10	3,800
64	80	30°	23/10	4,800
80	100	31°	24/10	6,000
100	125	32°	25/10	7,600
125	160	33°	26/10	9,600
160	200	34°	27/10	12,000
200	250	35°	28/10	15,000
250	320	36°	29/10	19,000
320	400	37°	30/10	24,000
400	500	38°	31/10	30,000
500	640	39°	32/10	38,000

*BSI Logarithmic Speed Ratings may be used with certain meters calibrated in Scheiner degrees. A correction may have to be applied in some cases.

†ASA Exposure Indexes are identical with Kodak and Ansco Exposure Indexes.

NOTE 1—The DIN conversion values given here correspond to ratings by Kodak, Ltd., of London for use with films of their manufacture with the Prinsen and Chromophot exposure meters. Other sources may not agree with the values given above, and values for other exposure meters should be determined by test.

NOTE 2—H&D values given above correspond to ratings by Kodak, Ltd., of London for films of their manufacture in connection with the *pre-war* Avo exposure meter. Other sources give widely varying ratios between H&D speeds and ratings in other systems, and it is doubtful that any authentic conversion table can be arrived at. The above values must, therefore, be considered only as average, approximate figures which will have to be confirmed by individual test in the case of any other meter and/or films.

2. UNIVERSAL FLASHBULB EXPOSURE TABLE

(For all flash lamps except Focal Plane, Class FP)

The table which follows will enable the photographer to find at once the exposure "guide number" for any flash lamp at present available, as well as any lamp likely to be released to the public in the future, used with any film or plate.

To use this table, it is necessary only to know the light output of the lamp in lumen-seconds, and the Tungsten Film Exposure Index. The light output of all flashbulbs will be found in the descriptive literature issued by the respective lamp manufacturers. Film Exposure Indexes are found in the instruction leaflet packed with the particular film. To find the guide number for any combination, simply locate the light output of the lamp in the left-hand column, then read across to the column under the speed of the film in use. In the box at the intersection of these two columns will be found guide numbers for "open flash" (T, B, 1/25 and 1/50 sec.), 1/100 sec., 1/200 sec. and 1/400 sec. Dividing the guide number by the lamp-to-subject distance in feet gives the f-number necessary with the chosen shutter speed.

Note that the light output of the lamp, in lumen-seconds, is not always a reliable guide to exposure at the higher shutter speeds. Some of the very large lamps have a large total lumen-second output due to their long burning time, but their peak illumination (or brightness) is only slightly higher than the average lamp. Thus using these large lamps at high shutter speeds will waste a large part of the light available, and result in underexposure. For this reason guide numbers for lamps over 100,000 lumen-seconds are given only for open-flash.

Note also, that if the line marked 4,500 to 6,300 lumen-seconds is used to obtain exposures for SF and SM lamps, the line marked T, B, 1/25, 1/50 sec. should also be used for the 1/100 second shutter speed. Since the flash duration of this lamp is about 1/200 second, the entire flash will be utilized at all slower shutter speeds, and no allowance need be made for any speed below 1/200. Using the 1/100 line for this lamp at such a shutter setting may result in overexposure.

The table may be used equally well for Color films. For Daylight Type color films, blue lamps should be used, and the film speed will, of course, be the Daylight Exposure Index.

Flashlamp Lumen Seconds	EXPOSURE INDEX (Tungsten)					SHUTTER SPEED
	5	10	20	40	80	
4,500 to 6,300	28	40	56	67	128	T, B, 25, 50
	21	30	42	56	84	100
	19	24	38	47	76	200
	14	17	28	34	56	400
6,300 to 9,000	35	50	70	100	140	T, B, 25, 50
	28	38	56	77	112	100
	22	30	44	60	88	200
	15	22	30	44	60	400
9,000 to 12,500	40	56	80	112	160	T, B, 25, 50
	31	44	62	88	124	100
	25	35	50	70	100	200
	17	25	34	50	68	400
12,500 to 18,000	45	60	90	120	180	T, B, 25, 50
	37	45	75	90	150	100
	27	38	54	75	108	200
	19	28	34	55	76	400
18,000 to 25,000	55	68	110	135	220	T, B, 25, 50
	42	60	84	117	168	100
	37	48	75	95	150	200
	27	34	55	67	110	400
25,000 to 35,000	70	100	140	200	280	T, B, 25, 50
	55	78	110	155	220	100
	44	60	88	120	175	200
	30	44	60	88	120	400
35,000 to 50,000	80	113	160	225	320	T, B, 25, 50
	62	88	125	175	250	100
	50	70	100	140	200	200
	35	50	70	100	140	400
50,000 to 70,000	85	120	170	240	340	T, B, 25, 50
	65	92	130	185	260	100
	55	75	110	150	220	200
	38	55	75	110	150	400
70,000 to 100,000	110	135	220	270	440	T, B, 25, 50
	85	117	190	235	380	100
	75	85	155	190	310	200
	55	65	110	135	220	400
100,000 to 140,000	135	165	270	330	540	Open Flash Only
	These large lamps not used in synchronizers					
140,000 to 200,000	165	270	330	540	660	Open Flash Only
	These large lamps not used in synchronizers					

3. DIRECT METRIC EQUIVALENTS

For direct conversions (not compound) the following tables will be found to be extremely useful and practical.

For example, if a formula is available, say, expressed only in the Avoirdupois System—and only a Metric System scale is available in connection with a beaker graduated in fluid ounces, one may directly convert the avoirdupois weights into metric units and compound the formula without converting it into the metric values.

GRAMS to GRAINS

g	grains
1	15
2	31
3	46
4	62
5	77
6	93
7	108
8	123
9	139
10	154
15	231
20	309
25	386
30	463
35	540
40	617
45	694
50	772
75	1157
100	1543
500	7716
1000	15432

GRAINS to GRAMS

grains	g
1	0.06
2	0.13
3	0.19
4	0.26
5	0.32
6	0.39
7	0.45
8	0.52
9	0.58
10	0.65
15	0.97
20	1.30
25	1.62
30	1.94
35	2.27
40	2.59
45	2.92
50	3.24
75	4.86
100	6.48
500	32.40
1000	64.80

FEET to METERS

ft	m
3	.91
3½	1.07
5	1.52
6	1.83
7	2.13
8	2.44
9	2.74
10	3.05
12	3.66
15	4.57
20	6.10
25	7.62
30	9.14
40	12.19
50	15.24
75	22.86
100	30.48
150	45.72

METERS to FEET

m	ft in (approx.)
1	3 - 3
1.25	4 - 1
1.5	4 - 11
1.75	5 - 9
2	6 - 7
2.5	8 - 2
3	9 - 10
4	13 - 1
5	16 - 5
6	19 - 8
7	23 - 0
8	26 - 3
9	29 - 6
10	32 - 10
15	49 - 3
20	65 - 7
30	98 - 5
50	164 - 0

MILLIMETERS to INCHES

mm		in
1	.039	3/64
2	.079	5/64
3	.118	1/8
4	.157	5/32
5	.197	3/16
6	.236	15/64
7	.276	9/32
8	.315	5/16
9	.354	23/64
10	.394	25/64

INCHES to MILLIMETERS

in	mm
1	25.4
2	50.8
3	76.2
4	101.6
5	127.0
6	152.4
7	177.8
8	203.2
9	228.6
10	254.0

GRAMS to OZS.

g	oz
5	.18
10	.35
15	.53
20	.71
25	.88
50	1.76
100	3.53
150	5.29
200	7.05
250	8.81
300	10.58
350	12.34
400	14.10
450	15.87
500	17.63
600	21.16
800	28.21
1000	35.27

OZS. to GRAMS

oz	g
1	28.3
2	56.7
3	85.0
4	113.4
5	141.7
6	170.1
7	198.4
8	226.8
9	255.1
10	283.5
11	311.8
12	340.2
13	368.5
14	396.9
15	425.2
16	453.6
24	680.4
32	907.2

GRAINS to OZS.

grains	oz.
30	.07
50	.11
60	.14
80	.18
90	.21
100	.23
150	.34
200	.46
250	.57
300	.69
400	.92
500	1.15
750	1.72
1000	2.29
2000	4.58
3000	6.88
4000	9.16
5000	11.45
6000	13.75
7000	16.00

OZS. to GRAINS

oz	grains
0.1	44
0.2	88
0.3	131
0.4	175
0.5	219
0.6	262
0.7	306
0.8	350
0.9	394
1.0	438
2.0	875
3.0	1313
4.0	1750
5.0	2185
6.0	2625
7.0	3060
8.0	3500
9.0	3940
10.0	4375
16.0	7000

FLUID OZS. to CUBIC CENTIMETERS

fl oz.	cc
1	30
2	59
3	89
4	118
5	148
6	177
7	207
8	237
9	266
10	296
11	325
12	355
13	384
14	414
15	444
16	473
24	710
32	946
64	1892
128	3785

CUBIC CENTIMETERS to FLUID OZS.

cc	fl oz
50	1.69
75	2.54
100	3.38
150	5.07
175	5.92
200	6.76
225	7.61
250	8.45
300	10.14
350	11.83
400	13.52
450	15.21
500	16.91
750	25.36
900	30.43
1000	33.81
2000	67.63
3000	101.44
4000	135.26
5000	169.07

4. ELECTRICAL POWER

The power that is transmitted by any electric circuit depends on the current and the voltage. The unit, the watt, is the amount of power obtained from one ampere at one volt. This unit is too small for some purposes and the kilowatt equal to 1,000 watts is used.

For D.C. circuits $W = I \times E$

W = Power in watts

I = Current in amperes $= \frac{W}{E}$

E = Electromotive force in volts $= \frac{W}{I}$

In A.C. circuits the entire current is not always available for doing work. This calls for another term in the energy equation, the power factor, which is the ratio of the current available for power to the total current.

For single-phase A.C. circuits the equation becomes: $W = I \times E \times P$

For two-phase A.C.: $W = 2 \times I \times E \times P$

For three-phase A.C.: $W = 1.73 \times I \times E \times P$

(P = Power factor of the circuit.)

Occasionally it becomes necessary to determine the voltage drop, for a given current load, of a cable having a certain resistance; or to determine the current through a given resistance when a given voltage is applied. For these calculations, Ohm's law is used; it will be valid for all D.C. circuits and non-inductive A.C. circuits. It cannot be used, in the form given, for A.C. circuits containing inductance (such as motors, magnets, etc.) or capacitance (condensers, synchronous motors, etc.).

Where E = voltage

I = current

R = resistance

$E = I \times R$

$R = \frac{E}{I}$

$I = \frac{E}{R}$

and since $W = E \times I$, and $E = I \times R$, we may express power in terms of current and resistance:

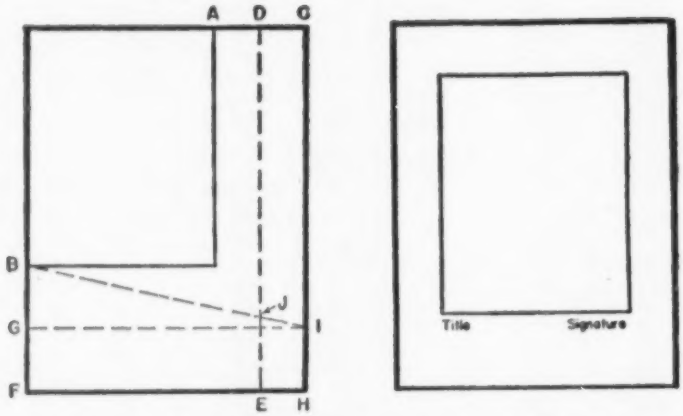
$W = (I \times R) \times I$, therefore

$W = I^2 \times R$

5. AUTOMATIC PLACEMENT OF PRINTS ON MOUNTS

The preferred placement of prints on their mounts is usually in a position somewhat above center with equal side margins. This position is usually found by trial and error, which frequently leads to poor placement of prints upon their mounts, especially where prints vary in size.

A geometric method which places the print very nearly upon "optical center" regardless of its size and shape is shown in the diagram.



Step 1: Trim the print to size and place it in the upper lefthand corner of the mount, its top right and lower left corners falling at A and B respectively.

Step 2: Divide the remaining space A to C in half to locate point D, then draw the line D to E parallel to the edge of the mount.

Step 3: Divide the remaining space B to F between the bottom of print and mount in half, locating point G, then draw the line G to I parallel to the bottom of the mount.

Step 4: Connect points B and I. The intersection of this line with the line DE gives the point J.

Step 5: Mount print, with its right edge on line DE, and the lower right corner on point J.

Title and signature are usually placed as shown in the righthand figure.

7. COMPOUND CONVERSION TABLES

6. THERMOMETER SCALES COMPARED

(Centigrade-Fahrenheit Equivalents)

°C.	°F.	°C.	°F.	°C.	°F.	°C.	°F.	°C.	°F.	°C.	°F.
+100	+212										
99.44	211	74.44	166	49.44	121	24.44	76	− 0.55	31	−25.55	−14
98.89	210	73.89	165	48.89	120	23.89	75	− 1.11	30	−26.11	−15
98.33	209	73.33	164	48.33	119	23.33	74	− 1.67	29	−26.67	−16
97.78	208	72.78	163	47.78	118	22.78	73	− 2.22	28	−27.22	−17
97.22	207	72.22	162	47.22	117	22.22	72	− 2.78	27	−27.78	−18
96.67	206	71.67	161	46.67	116	21.67	71	− 3.33	26	−28.33	−19
96.11	205	71.11	160	46.11	115	21.11	70	− 3.89	25	−28.89	−20
95.55	204	70.55	159	45.55	114	20.55	69	− 4.44	24	−29.44	−21
95	203	70	158	45	113	20	68	− 5	23	−30	−22
94.44	202	69.44	157	44.44	112	19.44	67	− 5.55	22	−30.55	−23
93.89	201	68.89	156	43.89	111	18.89	66	− 6.11	21	−31.11	−24
93.33	200	68.33	155	43.33	110	18.33	65	− 6.67	20	−31.67	−25
92.78	199	67.78	154	42.78	109	17.78	64	− 7.22	19	−32.22	−26
92.22	198	67.22	153	42.22	108	17.22	63	− 7.78	18	−32.78	−27
91.67	197	66.67	152	41.67	107	16.67	62	− 8.33	17	−33.33	−28
91.11	196	66.11	151	41.11	106	16.11	61	− 8.89	16	−33.89	−29
90.55	195	65.56	150	40.55	105	15.55	60	− 9.44	15	−34.44	−30
90	194	65 00	149	40	104	15	59	−10	14	−35	−31
89.44	193	64.44	148	39.44	103	14.44	58	−10.55	13	−35.55	−32
88.89	192	63.89	147	38.89	102	13.89	57	−11.11	12	−36.11	−33
88.33	191	63.33	146	38.33	101	13.33	56	−11.67	11	−36.67	−34
87.78	190	62.78	145	37.78	100	12.78	55	−12.22	10	−37.22	−35
87.22	189	62.22	144	37.22	99	12.22	54	−12.78	9	−37.78	−36
86.67	188	61.67	143	36.67	98	11.67	53	−13.33	8	−38.33	−37
86.11	187	61.11	142	36.11	97	11.11	52	−13.89	7	−38.89	−38
85.55	186	60.55	141	35.55	96	10.55	51	−14.44	6	−39.44	−39
85	185	60	140	35	95	10	50	−15	5	−40	−40
84.44	184	59.44	139	34.44	94	9.44	49	−15.55	4		
83.89	183	58.89	138	33.89	93	8.89	48	−16.11	3		
83.33	182	58.33	137	33.33	92	8.33	47	−16.67	2		
82.78	181	57.78	136	32.78	91	7.78	46	−17.22	1		
82.22	180	57.22	135	32.22	90	7.22	45	−17.78	0		
81.67	179	56.67	134	31.67	89	6.67	44	−18.33	− 1		
81.11	178	56.11	133	31.11	88	6.11	43	−18.89	− 2		
80.55	177	55.55	132	30.55	87	5.55	42	−19.44	− 3		
80	176	55	131	30	86	5.	41	−20	− 4		
79.44	175	54.44	130	29.44	85	4.44	40	−20.55	− 5		
78.89	174	53.89	129	28.89	84	3.89	39	−21.11	− 6		
78.33	173	53.33	128	28.33	83	3.33	38	−21.67	− 7		
77.78	172	52.78	127	27.78	82	2.78	37	−22.22	− 8		
77.22	171	52.22	126	27.22	81	2.22	36	−22.78	− 9		
76.67	170	51.67	125	26.67	80	1.67	35	−23.33	−10		
76.11	169	51.11	124	26.11	79	1.11	34	−23.39	−11		
75.55	168	50.55	123	25.55	78	0.55	33	−24.44	−12		
75	167	50	122	25	77	0	32	−25	−13		

Basic Conversion Factors

To convert Fahrenheit into Centigrade:
Subtract 32; multiply by 5 and divide by 9.
Example: 125° F. − 32 = 93 × 5 = 465 ÷ 9 = 51.67° C.

To convert Centigrade into Fahrenheit:
Multiply by 9; divide by 5; add 32 to result.
Example: 18° C. × 9 = 162 ÷ 5 = 32.4 + 32 = 64.4° F.

8. RUNNING TIME OF MOTION PICTURE FILMS

7. COMPOUND CONVERSION TABLES

The following Compound Conversion tables are offered for quick reference, checking and comparison of photographic formulas. Containing merely the most popularly encountered quantities they can readily be used for conversions of other units, multiples of those indicated. Most fractional figures are rounded off for convenience in weighing and measuring without introducing appreciable errors.

When tables do not give the equivalent directly and completely, it can usually be obtained, without the necessity of making multiplications by reduction factors, by using quantities from several tables, making a shift of the decimal point, if necessary, and merely adding the results.

GRAMS PER LITER	GRAINS PER QUART	GRAINS PER QUART	GRAMS PER LITER
g/liter	grains/qt.	grains/qt.	g/liter
0.5	7.3	5	0.3
1.0	14.6	10	0.7
1.5	21.9	15	1.0
2.0	29.2	20	1.4
2.5	36.5	25	1.7
3.0	43.8	30	2.1
3.5	51.1	40	2.7
4.0	58.4	50	3.4
4.5	65.7	60	4.1
5.0	73.0	70	4.8
6.0	87.6	80	5.5
7.0	102.2	90	6.2
8.0	116.8	100	6.8
9.0	131.4	150	10.3
10.0	146.0	200	13.7
20.0	292.0	300	20.5
25.0	365.0	400	27.4
30.0	438.0	500	34.2
40.0	584.0	600	41.1
50.0	730.0	700	47.9

GRAMS PER LITER	OUNCES PER QUART	OUNCES PER QUART	GRAMS PER LITER
g/liter	oz/qt	oz/qt	g/liter
1.0	.03	0.1	3
5.0	.17	0.2	6
10.0	.33	0.3	9
20.0	.67	0.4	12
25.0	.83	0.5	15
30.0	1.00	0.6	18
35.0	1.17	0.7	21
40.0	1.34	0.8	24
45.0	1.50	0.9	27
50.0	1.67	1.0	30
60.0	2.00	2.0	60
70.0	2.34	3.0	90
80.0	2.67	4.0	120
90.0	3.00	5.0	150
100.0	3.34	6.0	180
150.0	5.00	7.0	210
200.0	6.68	8.0	240
250.0	8.35	9.0	270
300.0	10.00	10.0	300

FL. OZS. PER QT. to CC PER LITER		CC PER LITER to FL. OZS. PER QT.	
fl oz/qt	cc/l	cc/l	fl oz/qt
⅛ (1 fl dr)	3.9	1.0 (.25 fl dr)	.032
¼ (2 fl dr)	7.8	5.0 (1.25 fl dr)	.160
⅜ (3 fl dr)	11.7	10.0 (2.50 fl dr)	.320
½ (4 fl dr)	15.6	15.0 (3.80 fl dr)	.480
⅝ (5 fl dr)	19.5	20.0 (5.10 fl dr)	.640
¾ (6 fl dr)	23.5	25.0 (6.40 fl dr)	.800
⅞ (7 fl dr)	27.3	30.0 (7.70 fl dr)	.960
1 (8 fl dr)	31.3	40.0	1.280
2	62.5	50.0	1.600
3	93.8	100.0	3.200
4	125.0	110.0	3.520
5	156.3	120.0	3.840
6	187.5	130.0	4.160
7	218.8	140.0	4.480
8	250.0	150.0	4.800
9	281.3	200.0	6.400
10	312.5	300.0	9.600
12	375.0	400.0	12.800
16	500.0	500.0	16.000

8. STOPPING MOTION—SHUTTER SPEEDS NEEDED

(Subject moving 10 mph at right angles to camera)

Distance in Feet from subject	Approximate Focal Length—Inches 4	5	6	7	8
12	1/500	1/600	1/700	1/800	1/1000
25	1/250	1/300	1/350	1/400	1/500
50	1/125	1/150	1/170	1/200	1/250
100	1/70	1/80	1/90	1/100	1/125

These speeds are only approximate, and have been rounded off to the nearest even value. They are sufficiently accurate for all ordinary photographic purposes.

This table applies to a subject moving 10 miles per hour at right angles to the camera. For other situations, corrections are made as follows:

(a) Double the speed of the shutter (1/100 instead of 1/50) for double the speed of subject.

(b) Halve the shutter speed (1/50 instead of 1/100) for half the speed of the subject.

(c) Double the shutter speed for half the distance to the subject.

(d) Halve the shutter speed for double the distance to the subject.

(e) Double the shutter speed for double the focal length.

(f) Halve the shutter speed for half the focal length.

(g) Use ⅓ the shutter speed if the subject is coming directly toward you or going directly away.

(h) Use ⅔ the shutter speed if it is coming or going at 45 degrees.

When in doubt use the next HIGHER speed.

9. RUNNING TIME OF MOTION PICTURE FILMS

The tables show the time required for various lengths of film to run through camera and/or projector at "silent" and "sound" speeds.

They are useful for two purposes: *First*, to determine the time a given scene of known length will remain on the screen. *Second*, to decide how long to run the camera in order to expose a desired length of film.

8-mm Film—Silent speed only: 16 frames per second = 12 feet per minute.

Feet	Min.	Sec.	Feet	Min.	Sec.	Feet	Min.	Sec.	Feet	Min.	Sec.
1	—	5	12	1	0	55	4	35	120	10	—
2	—	10	13	1	5	60	5	—	130	10	50
3	—	15	14	1	10	65	5	25	140	11	40
4	—	20	15	1	15	70	5	50	150	12	30
5	—	25	20	1	40	75	6	15	160	13	20
6	—	30	25	2	5	80	6	40	170	14	10
7	—	35	30	2	30	85	7	5	180	15	—
8	—	40	35	2	55	90	7	30	190	15	50
9	—	45	40	3	20	95	7	55	200	16	40
10	—	50	45	3	45	100	8	20	300	25	—
11	—	55	50	4	10	110	9	10	400	33	20

16mm Film—Silent speed: 16 frames per second = 24 feet per minute.

1	—	2½	12	—	30	55	2	17½	120	5	—
2	—	5	13	—	32½	60	2	30	130	5	25
3	—	7½	14	—	35	65	2	42½	140	5	50
4	—	10	15	—	37½	70	2	55	150	6	15
5	—	12½	20	—	50	75	3	7½	160	6	40
6	—	15	25	1	2½	80	3	20	170	7	5
7	—	17½	30	1	15	85	3	32½	180	7	30
8	—	20	35	1	27½	90	3	45	190	7	55
9	—	22½	40	1	40	95	3	57½	200	8	20
10	—	25	45	1	57½	100	4	10	300	12	30
11	—	27½	50	2	5	110	4	35	400	16	40

16mm Sound Film—Sound speed: 24 frames per second = 36 feet per minute.

1	—	1⅔	12	—	20	60	1	40	700	19	26⅔
2	—	3⅓	13	—	21⅔	70	1	56⅔	800	22	13⅓
3	—	5	14	—	23⅓	80	2	13⅓	900	25	—
4	—	6⅔	15	—	25	90	2	30	1,000	27	46⅔
5	—	8⅓	20	—	33⅓	100	2	46⅔	1,100	30	33⅓
6	—	10	25	—	41⅔	200	5	33⅓	1,200	33	20
7	—	11⅔	30	—	50	300	8	20	1,300	36	6⅔
8	—	13⅓	35	—	58⅓	400	11	6⅔	1,400	38	53⅓
9	—	15	40	1	6⅔	500	13	53⅓	1,500	41	40
10	—	16⅔	45	1	15	600	16	40	1,600	44	26⅔
11	—	18⅓	50	1	22⅔						

35mm Silent Film—Silent speed: 16 frames per second = 60 feet per minute.

1	—	1	13	—	13	80	1	20	1,000	16	40
2	—	2	14	—	14	90	1	30	1,100	18	20
3	—	3	15	—	15	100	1	40	1,200	20	—
4	—	4	20	—	20	200	3	20	1,300	21	40
5	—	5	25	—	25	300	5	—	1,400	23	20
6	—	6	30	—	30	400	6	40	1,500	25	—
7	—	7	35	—	35	500	8	20	1,600	26	40
8	—	8	40	—	40	600	10	—	1,700	28	20
9	—	9	45	—	45	700	11	40	1,800	30	—
10	—	10	50	—	50	800	13	20	1,900	31	40
11	—	11	60	1	—	900	15	—	2,000	33	20
12	—	12	70	1	10						

35mm Sound Film—Sound speed: 24 frames per second = 90 feet per minute.

Feet	Min.	Sec.	Feet	Min.	Sec.	Feet	Min.	Sec.	Feet	Min.	Sec.
1	—	⅔	13	—	8⅔	80	—	53⅓	1,000	11	6⅔
2	—	1⅓	14	—	9⅓	90	1	—	1,100	12	13⅓
3	—	2	15	—	10	100	1	6⅔	1,200	13	20
4	—	2⅔	20	—	13⅓	200	2	13⅓	1,300	14	26⅔
5	—	3⅓	25	—	16⅔	300	3	20	1,400	15	33⅓
6	—	4	30	—	20	400	4	26⅔	1,500	16	40
7	—	4⅔	35	—	23⅓	500	5	33⅓	1,600	17	46⅔
8	—	5⅓	40	—	26⅔	600	6	40	1,700	18	53⅓
9	—	6	45	—	30	700	7	46⅔	1,800	20	—
10	—	6⅔	50	—	33⅓	800	8	53⅓	1,900	21	6⅔
11	—	7⅓	60	—	40	900	10	—	2,000	22	13⅓
12	—	8	70	—	46⅔						

10. PROJECTION DISTANCE AND SCREEN SIZE

(For 16-mm and 8-mm Standard Projection Lenses)

The size of the image as it is projected on the screen is determined by the distance from the projector to the screen and the focal length of the lens used in the projector. The standard focal length for 16-mm projectors is 2 inches. Other focal lengths of projection lenses are available, ranging from 5/8 inch to 4 inches for 16-mm movies and from 3/4 inch to 1½ inches for 8-mm projectors.

The shorter focal length projection lenses are useful where room size or other conditions demand a short distance between projector and screen for large picture size. The longer focal length projection lenses are called for where it is desired to place the projector behind a rather large audience, as may be the case in school auditoriums, without unnecessarily increasing the size of the image projected on the screen.

The following table, reproduced here by courtesy of the Bell & Howell Company, gives the relationship between focal length of the projection lens and distance in feet from screen with the resulting width of the picture in a convenient form.

LENS FOCAL LENGTH		DISTANCE IN FEET FROM SCREEN														
		8′	10′	12′	16′	20′	25′	32′	36′	40′	50′	64′	75′	100′	125′	150′
On 8-mm Projector	16-mm Projector	WIDTH OF PICTURE														
	5/8″	4′10″	6′0″	7′2″	9′7″	12′0″	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	3/4″	4′0″	5′0″	6′0″	8′0″	10′0″	12′6″	.....	.....	.....	.....	.....	.....	.....	.....	.....
	1″	3′0″	3′9″	4′6″	6′0″	7′6″	9′4″	11′11″	13′5″	14′11″	.....	.....	.....	.....	.....	.....
3/4″	1½″	2′0″	2′6″	3′0″	4′0″	5′0″	6′3″	8′0″	9′0″	10′0″	12′6″	.....	.....	.....	.....	.....
1″	2″	1′6″	1′10″	2′3″	3′0″	3′9″	4′8″	6′0″	6′9″	7′5″	9′4″	11′11″	14′0″	18′9″	23′5″	28′1″
	2½″	1′2″	1′6″	1′9″	2′4″	3′0″	3′9″	4′9″	5′4″	6′0″	7′6″	9′7″	11′3″	15′0″	19′8″	22′5″
1½″	3″	.....	1′3″	1′6″	2′0″	2′6″	3′1″	4′0″	4′6″	5′0″	6′3″	8′0″	9′4″	12′6″	15′7″	18′8″
	3½″	.....	1′0″	1′3″	1′8″	2′1″	2′8″	3′5″	3′10″	4′3″	5′4″	6′11″	8′0″	10′8″	13′4″	16′0″
	4″	.....	.....	1′1″	1′6″	1′10″	2′4″	3′0″	3′3″	3′9″	4′8″	6′0″	7′0″	9′4″	11′8″	14′0″

11. COLOR TEMPERATURES OF LIGHT SOURCES

		Color Temperature °K
60-watt Gas-Filled Tungsten Filament Lamp	General lighting	2800
100-watt Tungsten Filament Lamp	General lighting	2865
500-watt Tungsten Filament Lamp	General lighting	2950
1000-watt Tungsten Filament Lamp	General lighting	3000
500-watt Projection Lamp		3175
G-E Lamp, 3200° K		3200
CP Lamps		3350
Photoflood Lamps		3400
Shredded Foil Photoflash Lamps		3800
SM Lamp		3300
22B and 5B		6300*
"Daylight" Fluorescent Lamp		6500*
Warm White Fluorescent Lamp		3500*
Cool White Fluorescent Lamp		4500
White Flame Carbon Arc		5000*
High Intensity Sun Arc		5550*
Superflash Lamp, 2B, 3B, 0B and 40B		6000*
Zirconium Concentrated Arc		3200

* Approximate equivalent visual value.

Some idea of the possible variation in the effective color temperature of daylight is given in the following table:

Mean noon sunlight at Washington, D. C.	5400
Direct sunlight about noon in midsummer may rise to	5800
Sunlight plus light from clear sky about noon will be still higher, perhaps to	6500
Light for a totally overcast sky may be as high as	6800
Light from a hazy or smoky sky may range from	7500 to 8400
Light from the clear blue sky	12,000 to 27,000
Direct sunlight early or late in the day in winter may drop to below	5800

12. SUPPLEMENTARY LENS EFFECTS

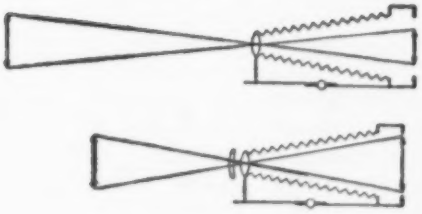


FIGURE 1

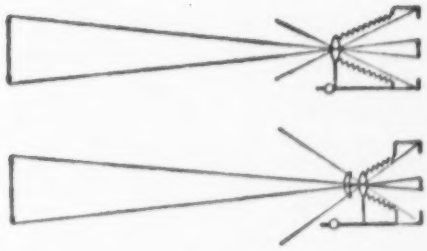


FIGURE 2

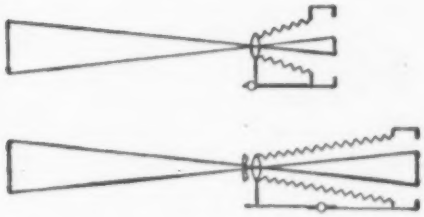


FIGURE 3

FIG. 1—Positive supplementary lens with normal bellows extension produces magnified images of close-up objects.
FIG. 2—Positive supplementary lens with retracted bellows produces reduced-size wide-angle images of objects at "normal" working distances.
FIG. 3—Negative supplementary lens with bellows extended produces magnified images of objects at "normal" working distances.

13. UNIVERSAL DEPTH-OF-FIELD TABLE

The following table indicates the depth of field for any lens for an acceptable circle of confusion of $f/2000$ —or 1/2,000 of the focal length. This value for the circle of confusion is for *critical work* or for *great enlargement*. For portraiture, or where the negative is not to be enlarged, the depth of field is greater than the value indicated.

The table applies only to NORMAL LENS EQUIPMENT, not to wide-angle, long-focus, or telephoto lenses.

The aperture-diameter (mm) value on the chart is determined by dividing the focal length of the lens in mm (marked on the lens barrel) by the *f-stop* at which the lens is used. Thus, a 100-mm focal-length lens used at $f/8$ is calculated as follows: $\frac{100}{8} = 12.5$ (mm).

Aperture diameter, min.	35	25	17.5	12.5	9.0	6.0	4.5	3.0	2.2	1.5
Distance focused upon, ft.	DEPTH OF FIELD, FT.									
Over 100	195 - ∞	140 - ∞	100 - ∞	71 - ∞	51 - ∞	34 - ∞	26 - ∞	17 - ∞	12 - ∞	8.5 - ∞
100	66.5 -202	58.6 - ∞	50.0 - ∞	41.5 - ∞	34.0 - ∞	25.5 - ∞	19.5 - ∞	14.5 - ∞	11.0 - ∞	8.0 - ∞
50	39.9 - 66.9	37.0 - 77.4	31.0 -101.0	29.3 - ∞	25.2 - ∞	20.2 - ∞	16.9 - ∞	12.6 - ∞	10.0 - ∞	7.5 - ∞
25	22.2 - 28.6	21.2 - 30.4	19.9 - 33.4	18.5 - 38.5	16.7 - 49.2	14.4 - 95.0	12.6 - ∞	10.0 - ∞	8.3 - ∞	6.3 - ∞
15	13.9 - 16.2	13.6 - 16.8	13.0 - 17.7	12.4 - 19.1	11.9 - 23.0	10.4 - 26.9	9.4 - 36.5	7.9 - ∞	6.8 - ∞	5.4 - ∞
10	9.5 - 10.5	9.3 - 10.8	9.1 - 11.1	8.8 - 11.7	8.4 - 12.4	7.7 - 14.2	7.2 - 16.5	6.3 - 21.0	5.5 - 51.5	4.6 - ∞
8	7.7 - 8.3	7.6 - 8.4	7.4 - 8.7	7.2 - 9.0	6.9 - 9.5	6.5 - 10.5	6.1 - 11.6	5.4 - 15.1	4.9 - 22.2	4.1 - ∞
6	5.8 - 6.2	5.8 - 6.3	5.7 - 6.4	5.5 - 6.6	5.4 - 6.8	5.1 - 7.3	4.9 - 7.9	4.4 - 10.0	4.1 - 11.7	3.5 - 21
5	4.8 - 5.1	4.8 - 5.2	4.8 - 5.3	4.7 - 5.4	4.5 - 5.6	4.3 - 5.9	4.2 - 6.3	3.9 - 7.9	3.5 - 8.5	3.1 - 12.5
4	3.9 - 4.1	3.9 - 4.1	3.9 - 4.2	3.8 - 4.2	3.7 - 4.3	3.6 - 4.5	3.5 - 4.7	3.3 - 5.7	3.1 - 5.8	2.8 - 7.5
3.5	3.4 - 3.6	3.4 - 3.6	3.4 - 3.6	3.3 - 3.7	3.3 - 3.8	3.2 - 3.9	3.1 - 4.1	2.9 - 4.8	2.7 - 4.9	2.5 - 5.9
3	3.0 - 3.0	3.0 - 3.0	3.0 - 3.0	2.9 - 3.1	2.8 - 3.2	2.8 - 3.3	2.7 - 3.4	2.6 - 3.6	2.4 - 3.9	2.2 - 4.2
2.5	2.5 - 2.5	2.5 - 2.5	2.5 - 2.5	2.4 - 2.6	2.4 - 2.6	2.3 - 2.7	2.3 - 2.8	2.2 - 2.9	2.1 - 3.1	1.9 - 3.5

14. COMMON FERROTYPING DEFECTS

IN GLOSSY PRINT FINISHING

TROUBLE	CAUSES	CURES
Sticking	Dirty drum.	Clean drum.
	Insufficient hardening.	Check the fixer—Ansco Acid Fixer and Hardener has a capacity of about 100—8x10 prints per gallon.
	Old hypo on drum.	Wash prints thoroughly.
	Insufficient heat or too high drum speed.	Decrease drum speed.
	Insufficient air circulation High humidity of surrounding area.	Relocate dryer for better air circulation or provide fans.
	Static electricity.	Ground dryer.
Blistering	Too much heat.	Decrease drum temperature.
	Insufficient hardening.	Replace fixing solution.
	Solution too warm.	Maintain solution temperature between 68°-70° F.
	Prolonged soaking.	Avoid soaking in any solution. Check wash time with the wash test provided.
	No short stop or insufficient short stop.	Blistering during processing may be due to too strong short stop.
	Poor fixing.	Use fresh fixer.
	Contamination either of drum and belt or in processing line —change solutions.	Clean drum. Clean belt. Change solutions.
Stains	Old processing solution.	Check solutions, esp. short stop.
	Contaminated drum or belt.	Clean belt and drum.
	Poor fixing.	Use fresh fixer.
Fleck Marks *(Spotty Gloss)*	Overfixing. Overhardening. Over short stop.	Proper fixing, hardening and short stopping are essential.
	Excessive heat.	Reduce drum temperature.
	Dirty drum.	Clean drum.
	Dirty wash water.	Filter water.
	Insufficient pressure of squeegee rollers.	Adjust the dryer according to the manufacturer's instructions.
	Print partially air dried before applying to ferrotype surface.	Do not allow prints to partially air dry—use Flexogloss to stabilize the moisture content of prints.
	Static-attracted dust.	Ground dryer.
Oyster Shell *(Concentric Ring Pattern)*	High humidity.	Reduce humidity if possible.
	Prints not drained sufficiently. Apron excessively wet. Insufficient heat.	Drain prints more thoroughly—use print-flattening solution.
Edgelift	Excessive heat.	Reduce drum temperature.
Image Tone Change	Excessive heat.	Reduce drum temperature.

15. PROCESSING SOLUTION LIFE & KEEPING QUALITIES

(WITHOUT USE)

APPROXIMATE TIME FOR VARIOUS KODAK FORMULAS

The tables which follow are estimates, based on experience, and are intended as a guide to the approximate keeping qualities of solutions made from Kodak formulas.

These values are based on developers stored without use at 65° to 70°F (18° to 21°C) and are less at higher temperatures. Agitation of solutions also decreases their life.

The values given for *capacity* represent the number of films or plates that may be developed before the emulsion speed has dropped to 75% of its value in fresh developer. This assumes use of the developer without replenishment.

The values given represent the capacity of a developer in continuous use. Intermittently used developers generally do not have as great a capacity. The chief factors affecting the useful capacity of a solution are:

1. Nature of emulsion processed.
2. Area of solution exposed to air, and susceptibility of the particular solution to aerial oxidation.
3. Degree of agitation.
4. Time of storage, with and without use.
5. Contamination or replenishment by other baths in which the material was previously treated.
6. Temperature.
7. Degree of dilution.

Approximate roll film equivalents in determining useful life of processing solutions:

- 2 Rolls 127 = one 8 x 10 sheet
- 1 Roll 35-mm (36-exp.) = one 8 x 10 sheet
- 1 Roll 620 (120) = one 8 x 10 sheet
- 1 Roll 616 (116) = one and a half 8 x 10 sheets
- 1 Roll 122 = two 8 x 10 sheets

KEEPING PROPERTIES WITHOUT USE					USEFUL LIFE 8 x 10-INCH SHEETS PER GALLON	
Formula	8 x 10 Tray	Gallon Tank	Stoppered Bottle Full	Stoppered Bottle Half Full	8 x 10 Tray	Narrow and Deep Tank
D-7	8 Hrs.	1 Wk.	3 Mo. S.S.	2 Mo. S.S.	10	20
D-8	4 Hrs.	N.R.	2 Mo.	1 Mo.	15	30
D-11	24 Hrs.	1 Mo.	6 Mo.	1 Mo.	20	40
DK-15	8 Hrs.	1 Wk.	3 Mo.	1 Mo.	15	30
D-19	24 Hrs.	1 Mo.	6 Mo.	2 Mo.	30	60*
DK-20	24 Hrs.	1 Mo.	6 Mo.	2 Mo.	20	30*†
D-32	2 Hrs.	N.R.	2 Mo. S.S.	2 Wks. S.S.	15	N.R.
DK-50	24 Hrs.	1 Mo.	6 Mo.	2 Mo.	20	40*
D-52	24 Hrs.	2 Wks.	3 Mo.	1 Mo.	80 (1:1)	N.R. Prints
DK-60a	24 Hrs.	3 Wks.	6 Mo.	2 Mo.	20	40*
D-61a	24 Hrs.	2 Wks.	2 Mo.	3 Wks.	15 (1:1)	30 (1:3)
D-72	24 Hrs.	2 Wks.	3 Mo.	1 Mo.	20 (1:1) 15 (1:2) 100 (1:2)	40 (1:1) Neg. 30 (1:2) N.R. Prints
D-76	24 Hrs.	1 Mo.	6 Mo.	2 Mo.	20	30*†
D-82	2 Hrs.	24 Hrs.	1 Wk.	2 Days	10	20
D-85	4 Hrs.	N.R.	1 Mo.	3 Days	25	40
D-88	4 Hrs.	1 Day	1 Mo.	1 Wk.	40	50
DK-93	24 Hrs.	1 Mo.	6 Mo.	2 Mo.	20	40
Microdol	24 Hrs.	1 Mo.	6 Mo.	2 Mo.	20	30*†
Versatol (1:3)	24 Hrs.	1 Mo.	6 Mo.	2 Mo.	80	N.R. Prints
Versatol (1:7)	.....	2 Wks.	3 Mo.	1 Mo.	—	16* Neg.
Dektol (1:1)	24 Hrs.	1 Mo.	4 Mo.	6 Wks.	30	40 Neg.
Dektol (1:2)	24 Hrs.	2 Wks.	2 Mo.	3 Wks.	120	N.R. Prints
Selectol	36 Hrs.	———	4 Mo.	6 Wks.	80 (1:1)	N.R. Prints

STOP BATHS

	8 x 10 Tray	Gallon Tank	Stoppered Bottle 65° F	Stoppered Bottle 75° F	Tray or Tank
SB-1	3 Days	1 Mo.	Indef.	Indef.	75
SB-1a	3 Days	1 Mo.	Indef.	Indef.	40 (With D-8)
SB-3	1 Day	1 Mo.	Indef.	Indef.	25
SB-4	1 Day	1 Mo.	Indef.	Indef.	25
SB-5	3 Days	1 Mo.	Indef.	Indef.	50
SB-5a	3 Days	1 Mo.	Indef.	Indef.	100

FIXING BATHS

	8 x 10 Tray	Gallon Tank	Stoppered Bottle 65° F	Stoppered Bottle 75° F	Water Rinse	Stop Bath
F-5	1 Week	1 Mo.	3 Mo.	2 Wks.	100	100
F-6	1 Week	2 Mo.	3 Mo.	3 Wks.	—	100
F-10	1 Week	2 Mo.	3 Mo.	3 Wks.	100	100
F-24	1 Week	1 Wk.	3 Mo.	2 Wks.	50	100

*Life greatly extended by addition of the proper replenisher.
†When the development time is increased by about 15% after each 4 sheets per gallon.

ABBREVIATIONS:

FS—Full Strength.
SS—Stock Solution in separate bottles.
N.R.—Not recommended.
W.R.—Water rinse between development and fixing.
S.B.—Stop bath between development and fixing.
Neg.—Negatives.
Dup.—Duplicates.
Pr.—Prints.
L.S.—Lantern Slides.

COVER STORY

By GEORGE BARRIS

Covey of gold-mine beauties looked like this in Barris' studio for historic photos. From left, Patchett, Mullen, Horan, Tripp.

MY HOUR WITH THE BIG FOUR

Shooting most expensive fashion models was like lighting a cigarette with a ten-dollar bill

THIS month's cover is something of a photographic rarity. The four highest-paid fashion models—worth together $200 an hour, and appearing regularly in countless magazines—had never been photographed *together*. I was approached with the idea of doing just that, told the girls were so busy I would probably never succeed—and started on what looked like an endless job.

Each one of the Big Four commands a fee of fifty (count 'em) dollars an hour. Their working hours are generally 10 to 4:30, with *double-time* for overtime to discourage clients from interfering with the girls' private lives. All four are married; Barbara Mullen designs interiors and washes dishes as charity work for a hospital, Evelyn Tripp lives and works on a farm in New Jersey, Jean Patchett plays golf, Dovima Horan likes to go to Europe on short notice.

When I asked them about getting together for a picture, they thought it was a great idea—and were willing to *donate* their valuable overtime. But it took more than a hundred phone calls and fifty-odd alternate schedules—submitted in quadruplicate to each girl each week, before all four could agree on a date. *Everything* happened to them—colds, sickness in the family, assignments.

Finally one day *six months later* they all walked into my studio at 4:30, carrying their extra costumes. When they emerged from the dressing room they were a sight to behold. Most startling was Dovima Horan, whose purple-shadowed eyes were set off by dead-white face makeup; Patchett's renowned beauty mark showed to good advantage; Mullen's hair was in studied disarray (later slicked down for the color photos); Evelyn Tripp was windblown and demure.

My preparations were precise: studio painted white, seamless paper clean and smooth, illumination level checked exactly. Every time I thought about the $100 each girl could have been earning at this hour, I knew this had to be it.

But they made it easy for me. They stepped delicately onto the paper, I said "ready," and suddenly they had assumed the delicately graceful poses for which they're so famous. They were individually beautiful, but each managed to integrate herself with the composition of the group. This ability plus their impersonal beauty which doesn't detract from the gowns they model, are the reasons for their high pay—and why they're booked solid a month in advance.

At 5:30 Evelyn Tripp rose sedately and announced that she had to make the 5:57 to New Jersey. The others broke into conversation: "I don't know *what* to give my husband for dinner . . . I hope I can make the supermarket before it closes." Etc. They're *women*, you know.—■

All old hands at posing, four top models produced a continually changing array of pictures for Barris' cameras, as witness this small section from just one of many Rollei contact sheets.

MEET THE NEW IDEA IN FINE MINIATURE CAMERAS . . .

The Kodak Retina IIIc

Here's a new system of photography . . . a new camera, latest in a distinguished series . . . and a brilliant system of supplementary aids.

Nestle the new Retina IIIc in your hands. Feel its balance, note the exquisite craftsmanship. Study the features—

The photocell exposure meter covers films from 5 to 320 ASA, and is built in. So is the self-timer of the 1-to-1/500-second shutter. So is the universal rear cell for all three lenses—the 50mm *f*/2, the 80mm *f*/4, and the 35mm *f*/5.6.

Meter, shutter, and diaphragm are all calibrated for the new "light value" system, with a shutter-diaphragm interlock that lets you pick any correct exposure combination by a simple twist of the wrist. Range- and viewfinder are combined: The rangefinder couples automatically to the focusing of your *f*/2 lens, and the readings are readily transferable to the 35mm and 80mm lens scales. Built-in flash synch covers F, M, and X sources.

One flick of a thumb lever advances the film, sets the shutter, and counts the exposure, with the camera still at your eye. The whole beautiful 5-inch handful weighs only about 24 ounces. And accessories round it out into a versatile photographic system.

These, briefly, are a few highlights of the new Kodak Retina IIIc Camera. But no briefing can do justice to this remarkable instrument. So, as concisely as we can manage, here are the full particulars:

Unique lens system

The Retina IIIc is built around an ingenious new lens system. This system gives you the advantages of high-quality interchangeable lenses, in a choice of focal lengths, without making you pay the full price for such lenses. It gives you the special advantages of a between-the-lens shutter (such as easy flash synch with F, M, and X sources, and no linear distortion in fast-moving subjects).

Key to the Retina lens system is a three-element universal rear cell, accurately computed to team up with three interchangeable front components—a high speed normal-focus Retina-Xenon C, 50mm *f*/2; a wide-angle Retina-Curtar component, 35mm *f*/5.6; and a Retina-Longar component, 80mm *f*/4, for portraits and semi-telephoto work. The rear cell is permanently mounted inside the camera, behind the shutter and diaphragm. The front components attach and detach swiftly by means of bayonet fittings.

Obviously, since only the "front end" is interchanged, it is possible to build higher quality into this lens system without a corresponding increase in cost for each focal length.

Rugged new focusing mount

The focusing mount is a retractable solid metal block supporting the lens-and-shutter combination and the focusing helix. It extends automatically as you open the camera and locks into absolutely rigid picture-taking position by a 6-point suspension. This provides a rock-steady support for the lens. Baffles inside the block prevent internal light reflections. A safety lock reminds you to set the focus at "inf" before closing the camera.

Built-in exposure meter

The built-in exposure meter has an extremely sensitive, sturdy, shock-proof photocell, moisture-sealed to give you long, accurate service. It's calibrated from 5 to 320 ASA and 9 to 27 DIN. Meter reads high- and low-level reflected light; and, with a mask supplied with the camera, lets you read high- and low-level incident light. Readings are in light-value numbers from 2 to 18 for shutter speeds from 1 to 1/500 second.

There are no computations to make. Just read the light-value number on the light meter, and set the same light value on the shutter. Then, any change you make in shutter speed is automatically compensated for by a change in diaphragm setting to give a constant exposure. Or, change the diaphragm setting and the shutter speed will automatically compensate. All scales are top reading and have click stops.

New shutter design

The Synchro Compur Shutter is entirely new in design, automatically cocks when you advance the film. It has 10 speeds from 1 to 1/500 second, plus "B." The built-in self-timer has approximately 10 seconds delay. The shutter is synchronized for Type F bulbs from 1 to 1/125 second; for Type M bulbs and electronic flash at all speeds, including 1/500. You'll find the plunger-type shutter release is exceptionally smooth.

Improved ranging and viewing

The superimposed-image type rangefinder is combined with the viewfinder. The superimposed image is a small diamond with the extra brilliance you need for focusing under low light conditions. The standard 50mm lens is coupled to the rangefinder, focuses from 2½ feet to infinity, has a depth-of-field scale for all

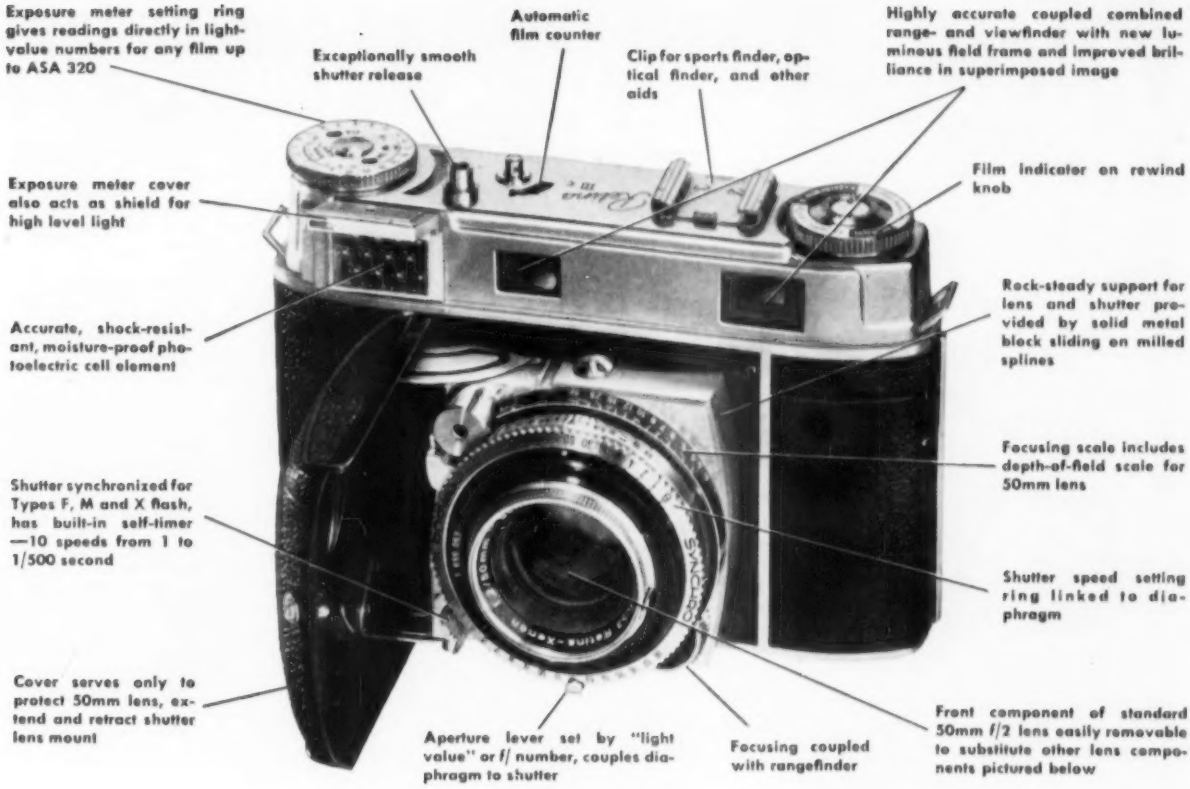
80mm

35mm

Tele

Sports

Micro



lens openings. The focusing scale is marked for "groups" and "scenes," and for infrared focusing. Optical finders for 35mm and 80mm lenses are available; focusing scales for these lenses are on the camera, and rangefinder readings are readily transferred.

The enclosed, eye-level viewfinder has an optically projected, bright-field frame which appears out in the picture area. Marks on the frame indicate parallax for near subjects. You slip auxiliary viewfinders for wide-angle and telephoto lenses into a clip on the camera top.

Convenient film operation

You advance the film by a lever on the bottom of the camera. One stroke of the lever advances film, cocks shutter, advances exposure counter. The camera has a new, easy method of making intentional double exposures. The film load indicator is on the rewind knob. The hinged back has a snap lock that makes loading extra easy.

Handsome styling

The handsome, continental styling of the Retina IIIc is combined with a rugged die-cast aluminum-alloy body and back. Metal trim is satin-finish chrome, and the body is covered with black grained and embossed leather. There are eyelets for a neck strap; a tripod socket in the base. The lens mount is threaded for a Series VI adapter ring.

That's about all we can put on paper. To get the real feel of the camera, to appreciate its fine craftsmanship, to find how convenient it is to operate, see the new Kodak Retina IIIc at your Kodak dealer's. And, if you're fortunate enough to be able to try the camera out, see the real proof in the crisp, sharp negatives and brilliant color transparencies. You'll decide the Retina IIIc is for you.

Prices: Kodak Retina IIIc Camera with *f*/2 Lens, $185; beautiful chrome-trimmed Field Case, $13.50; 80mm *f*/4 lens component, $82.50; 35mm lens component, $62.50. Sports finder, optical finder for 35mm and 80mm lens components, flash unit, close-up kit, microscope adapter, and other aids complete the versatile Retina IIIc system. Most Kodak dealers offer convenient terms. Prices include Federal Tax where applicable and are subject to change without notice.

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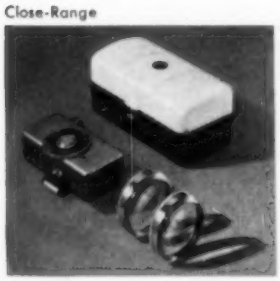
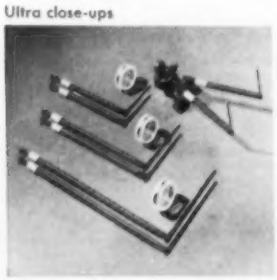
Close-Range



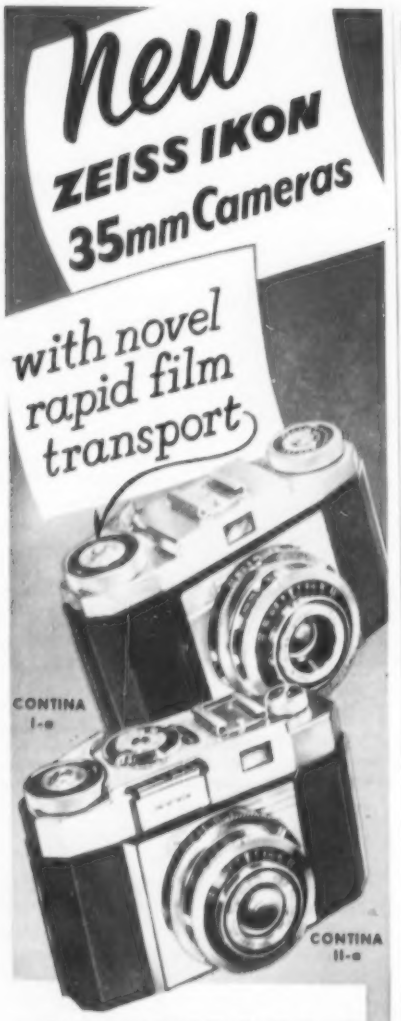
Ultra close-ups



M, F, X Flash

These are some of the elements in the versatile Retina IIIc system.

Kodak



CONTINA I-a & II-a

The speed with which the NEW Continas can be operated will amaze you. Their optical quality is outstanding — as the name Zeiss Ikon implies. And they are *attractively priced.*

One flick of the lever at top of camera advances the film and cocks the shutter. Fast lenses in rigid mounts — no bellows. Prontor SVS shutter has speeds to 1/500 sec. and self-timer. Fully synchronized. And the Contina II-a has a built-in photoelectric exposure meter. Use 35 mm film cartridges, yielding 36 exposures in color or black-and-white.

Contina I-a, with Novar f/3.5 lens, $54. Contina II-a, with Novar f/3.5 lens, $75; with Novicar f/2.8 lens, $86. (Case extra)

At leading dealers.
Write for literature.

CARL ZEISS, INC.
485 Fifth Ave., New York 17
Made in West Germany

ZEISS IKON

EKTACHROME VS KODACHROME

Here are the results of a series of laboratory tests on the new film discussed in the story on page 68

By IRA R. KOHLMAN

Manager, Quality Control Dept.
Pavelle Color, Incorporated

SHORTLY AFTER Kodak released the first E-2 processing kits for their new, faster 35-mm Ektachrome film in mid-January, I began a series of controlled tests to determine how the new color film differed from 35-mm Kodachrome in regard to speed, resolution, graininess, gradation, and color reproduction. The same E-2 Ektachrome emulsions (one each for the Daylight Type and the Type F) were used throughout, and the same Kodachrome emulsions (Daylight Type and Type A) too. Some of the Ektachrome films were processed in stainless-steel tanks in the control laboratory of Pavelle Color Incorporated and some went through the automatic processing machines. The Kodachrome went to the Kodak color-processing facility at Fair Lawn, N. J., which services the New York Metropolitan area.

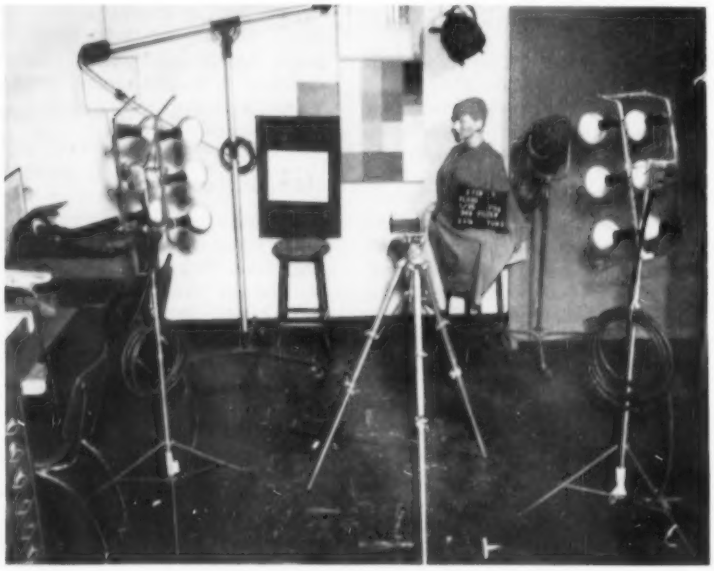
These were my findings based on the specific samplings selected:

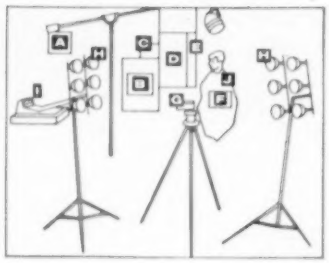
speed

After exposing about 200 frames each of daylight-type Kodachrome and daylight-type E-2 Ektachrome (the Kodachrome being submitted for processing at various times of the week), the results showed consistently that Ektachrome was three times (or a full stop and one-half) faster than Kodachrome (32 vs 10). Where Kodachrome produced a good winter sunlight exposure at *f*/6.3 and 1/50 second, Ektachrome called for *f*/11 at 1/50 second to produce comparable results.

Using electronic flash with the two daylight emulsions on the test setup illustrated on this page, a flash guide number of 40 was required by our particular unit

(*Continued on page* 111)





Test setup for comparison of new Ektachrome with Kodachrome is shown in photo above, individual equipment identified in outline drawing at right. **A** voltage-regulated power supply box **B** resolution chart **C** gray card for determining exposure with reflected-light meter **D** color chart **E** gray scale **F** data board for recording each exposure **G** test camera **H** 3400 K reflector-type Photofloods, twelve in all **I** color densitometer **J** test mannequin.

BROOKS

West's Largest Selection — Budget Terms Available

NEW-DISCONTINUED

	Reg.	NOW
Praktica FX f/1.9 preset Primoplan	$159.50	$ 79.95
Flexaret Synch. f/3.5	99.50	48.95
Ditto Camera f/3.5	99.50	48.00
105mm Telephoto Lens	37.50	29.95
Ditto Case	8.95	5.95
Contax IIA f/2 X. synch	336.00	218.00
Contax IIIA f/1.5 X. synch	412.00	279.00
Super Ikonta A f/3.5 Tessar X. synch	99.00	69.00
Super Ikonta B f/2.8 Tessar X. synch	139.00	99.00
Nikon 1954 model, w/f/1.4 Nikkor	299.50	199.00
Welti-35, w/f/2.8 Tessar synch	79.00	39.95

USED VALUES

Leica IIIF body	$129.50
Leica IIIF f/2 Summitar	173.95
90mm Elmar f/4 Chrome	69.95
85mm Cannon f/2 ctd	79.50
135mm Hektor f/4 Chrome	98.95
Imarect Finder, Leica	24.50
Contax IIIA f/2 Sonnar	198.95
85mm Sonnar f/2 light weight	109.00
135mm Sonnar f/4 light weight	99.00
85mm Nikkor f/2 ctd	98.00
135mm Nikkor f/4 ctd	74.00
Bolex H-16 f/1.9 ctd	199.00
Graflex Super D f/4.5 Aut. D. 3¼ x 4¼	119.00

Many others—write for complete list.

BROOKS 1st for Press

1955 SPEED GRAPHIC

Brand new features of the 1955 Speed Graphic include Graphic coupled rangefinder with built-in Rangelite and automatic parallax correcting optical viewfinder.

	Crown Graphic	Speed Graphic
4 x 5 w/135 mm Xenar f/4.7 MX 1/400	$199.50	$239.50
w/135mm Optar f/4.7 MX 1/400	207.45	331.45
w/Optar f/4.7 MX 1/400	271.45	315.45
w/127mm Ektar f/4.7 MX	269.45	313.45
w/135mm Xenar f/3.8 MX 1/400	259.50	299.50
w/150mm Xenar f/4.5 MX 1/400	249.50	294.50
w/152mm Ektar f/4.5 X sync. 1/200	293.45	347.45

BRAND NEW PRESS CAMERA ACCESSORIES

	Regular	Special
	4.25	2.99
4 x 5 Lisco Holders	21.75	17.20
23 Roll Film Holder for 2¼ x 3¼	17.95	14.40
23 Grafmatic Film Holder for 2¼ x 3¼	23.95	19.20
23 or 22 Roll Holder for 4 x 5	24.95	19.95
45 Grafmatic Film Holder for 4 x 5	39.75	31.90
4 x 5 Graflarger		

2¼ x 3¼ w/105mm Color Scopar f/3.5 w/1/400 of sec. MX sync	$199.50	$229.50
w/101mm Ektar f/4.5 MX 1/800	297.55	336.05
w/105mm Ektar f/3.7 MX 1/400	298.55	337.05
w/101 Optar f/4.5 MX 1/400	279.05	318.35

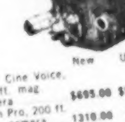
BROOKS 1st for Leica

TRADE UP TO A LEICA M3

Leica M3 with Summarit f/1.5	$468.00
Leica M3 with Summicron f/2 lens	447.00
Leica M3 with f/3.5 Elmar lens	348.00
Leica M-3 Body	288.00
Leica IF body, built-in flash	84.00
Leica IIF body, built-in flash	120.00
Leica IIIF body, built-in flash	180.00
Leica IIF with f3.5 Elmar	177.00

	M-3	Standard
35mm Summaron f/3.5	$ 99.00	$ 96.00
50mm Elmar, ctd. f/3.5	60.00	57.00
50mm Summarit, f1.5	180.00	177.00
50mm Summicron f2	159.00	156.00
85mm Summarex, f/1.5, Chrome		300.00
90mm Elmar f/4, Chrome	93.00	90.00
90mm Elmar f/4, Chrome, Collaps. mt.	150.00	147.00
125mm Hektor, f/2.5		135.00
135mm Hektor, Chrm., f/4.5	141.00	120.00
135mm Hektor sht. mtd.	121.50	17.50
Leica Meter	30.00	60.00
Omnica case		156.00
200mm Telyt f/4.5		450.00
400mm Telyt, f/5		102.00
Leica reflex housing		149.95
300mm Kilar, f/5.6		239.95
400mm Kilar, f/5.6		24.00
Leica Flash Gun		18.00
Leica Chico flashgun	19.50	294.00
Stereo Outfit for Leica	297.00	60.00
Omnica case for	60.00	

AURICON



	New	Used
Auricon Cine Voice, 100 ft. mag. camera	$695.00	$575.00
Auricon Pro, 200 ft. mag. camera	1310.00	995.00
Auricon Super, 1200 ft. mag. camera	3319.25	

MAGNAZYNC RECORDER

Magnazync SW 602, 16mm film transport with center tracking. Complete in portable case $1275.00

Other Model Prices on Request.

Model 400 .... $895.00

BOLEX H-16 LEADER

Tri Focal Viewfinder, turret head for 3 lenses. 25mm f/1.9 Lytar ctd. lens $269.50

Bolex H-16 Supreme camera f/1.9 .... $394.00

NEW BOLEX PAN CINOR ZOOM LENS for 8mm cameras, 12.5 to 36mm, f/2.8, D mount, focusing down to 2½", cpld vf $219.50

BOLEX 16mm Zoom lens, from 20-60mm f/2.8 .... $349.50

Bolex motor .... $ 77.50

16mm W.A. f/1.8 Switar 99.50

5½mm ultra W.A. f/1.8 Switar 8mm 119.50

OmniBolex deluxe case 79.50

16MM SPECIALTIES

New Zoomar 16 lens, 1 to 3-in. f/2.8 .... $600.00

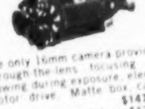
New B & H Anamorphic lens for wide screen movies $596.00

New B & H 70H f/1.9 .... $625.00

New 400 ft. magazine for above $162.50

New Motor for above, 8 to 64 frames $142.00

NEW ARRIFLEX 16



The only 16mm camera providing through the lens focusing and viewing during exposure, electric motor drive. Matte box, cables $1475.00

16mm Xenon f/1.9 lens $170.00
25mm Xenon f/1.5 lens 170.00
75mm Xenon f/2 lens 200.00

ROLLEIFLEX AND ROLLEICORD

With new coupled shutter diaphragm

w/Tessar f/3.5 lens $232.50
w/Xenar f/3.5 lens $217.50
Rolleiflex w/Schneider Xenotar f/2.8 lens or w/Zeiss Planar lens f/2.8 $291.50
Rolleicord V w/Xenar f/3.5 lens, full synch. light value $134.55
Case for 2.8C $ 18.00
Case for 3.5 $ 17.00
Rollei Flash Gun $ 29.95
Rollei Exchange New Camera with light values for your camera. MX $77.50

SWEDISH HASSELBLAD 1000F

2¼" x 2¼" single lens Reflex Camera. Interchangeable roll film magazines, automatic shutter setting, parallax-compensating sportsfinder with built-in contacts $379.50

New extreme wide angle Hasselblad w/38mm Biogon f/4.5 .... $489.50
Finder 49.50
Hasselblad Bellows for close-up work $115.00

Lenses:
135mm Ektar lens f/3.5 .... $285.00
250mm Sonnar f/5.6 $299.50
250mm Sonnar f/4 $389.00
Zeiss W.A. Distagon f/5.6, with case $189.50

BROOKS 1st for Linhof

BROOKS 1st for LINHOF

Linhof 2¼ x 3¼ Camera — Complete 3 Lens Outfit

Linhof 2¼ x 3¼ Camera, 65 f/6.8 W. A. Angulon Super Technika 2¼ x 3¼ Camera, 65 f/6.8 W. A. Angulon Lens, 105mm f/3.5 Schneider Xenar Normal Lens, 180mm f/5.5 Tele-Xenar Telephoto Lens. All in full synch. Compur Rapid Shutter to 1/500 sec. All lenses coupled to rangefinder $589.90

Same as above, with 105mm f/2.8 Xenotar, W.A. and Telephoto $663.70

LINHOF 4 x 5 SUPER TECHNIKA

Multifocus Rangefinder — Tilting and Swinging Back — Revolving Back — Triple Extension Bed — Drop Bed — All Lenses Coupled to Rangefinder — And **NOW NEW UNIVERSAL BACK** and Ektalite Screen. (Accepts Polaroid, Grafmatic, and Roll Film Holders).

4 x 5 LINHOF OUTFITS — Price below, includes camera with lenses (✔). With full synch. **MX Shutters up to 1/500 sec. Coated** — Other combinations on request

4 x 5	135mm f/3.8 Press Xenar	150mm f/4.5 Xenar	150mm f/5.6 Symmar	90mm f/6.8 Angulon	240mm f/5.5 Tele Xenar	Price
						$429.70
						$419.70
One lens Outfits	✔					$459.25
		✔				$515.19
			✔			$505.15
				✔		$544.70
Two lens Outfits	✔			✔		$645.60
		✔		✔		$635.60
			✔	✔	✔	$675.15
Three lens Outfits	✔			✔	✔	
		✔		✔	✔	
			✔			

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Newer than new in styling

In designing the BC-400, Kalart engineers set as their goal a flash unit that would be as beautiful as practical. The result is a trim, streamlined unit no larger than the palm of your hand — a unit that dresses up old cameras, harmonizes with present-day cameras, and will add distinction to cameras of the future.

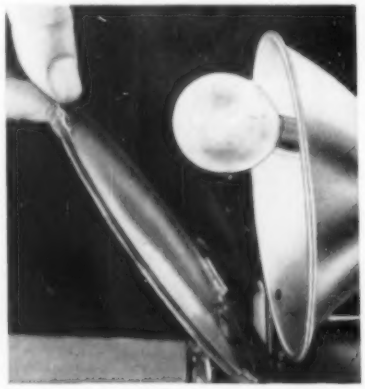
Newer than new in performance

The BC (battery-capacitor) of the Kalart BC-400 assures positive flash synchronization and long battery life (usually about two years). Its built-in test light tells instantly —before you shoot—if flashbulbs are OK—if the circuit is complete. In multiflash photography, it automatically checks *every bulb* and the wiring hook-up.

Pressing test light causes a signal flash — a positive visible indication that flashbulb will fire when shutter is tripped.

Newer than new in safety features

No other flash unit—regardless of price—makes flash photography so safe and certain as the Kalart BC-400. Its built-in Lucite Safety Shield not only guards against the hazard of flashbulbs shattering when fired but also actuates the automatic ejector. Flashbulbs pop out when the Safety Shield is opened. This unique construction also includes an automatic Safety First circuit breaker. Opening the Safety Shield breaks the circuit and eliminates the danger of a flashbulb accidentally firing while being inserted.



Opening Safety Shield automatically ejects flashbulb and breaks circuit so that a fresh bulb cannot fire while being inserted.

Newer than new in versatility

The Kalart BC-400 is the first flash unit scientifically designed to take all types of flash pictures. With its accessory "coilflash," you can hold the unit at arm's length—for off-camera shots or for bounce light. With accessory extension units, you can take multiflash pictures using up to three extensions. Series-wired self-closing outlets assure positive synchronization for extension lamps.

The Kalart BC-400 is equally versatile in the ease with which it can be used with different cameras. Whether your camera is American or foreign made—whether it has an electrical flash shoe, mechanical flash shoe or no flash shoe, a Kalart

With its accessory "Coilflash", it is easy to hold the Kalart BC-400 off-the-camera for better lighting effects; also use it for bounce lighting.

BC-400 can be attached in seconds. The basic unit is the same for all cameras. Different connector cords and brackets are interchangeable.

This feature is a tremendous convenience to the photographer who has several cameras. It saves money. For example, if you have a reflex or press camera, a 35 mm. camera or a stereo camera, you need only *one* basic Kalart BC-400 unit, and an inexpensive connector cord and bracket.

Take a good look at your present flash equipment. Compare it with the Kalart BC-400. Don't you owe it to yourself and to your cameras to buy this beautiful "newer than new" flash unit? Ask your photo dealer to demonstrate it. Or send for free illustrated booklet. Kalart, Plainville, Conn. © 1955 The Kalart Co.

to produce satisfactory results on Kodachrome, whereas a guide number of 65 produced comparable results with Ektachrome—the same difference in speed of a stop and a half.

The "tungsten" emulsions of the two films differ in their color response, the Ektachrome (Type F) being balanced for use with clear flashbulbs (app. 3800 K, equivalent color temperature) and the Kodachrome (Type A) for use with photofloods (3400 K). In terms of guide numbers for clear flashbulbs, I found the Ektachrome almost two full stops (four times) faster than the corresponding Kodachrome film. Much of the difference lies in the relative sensitivity of the two materials, though some can be attributed to filter requirements. The Ektachrome is used without a filter, whereas the Type A Kodachrome needs an 81-C filter to achieve correct color response, which cuts down on the effective speed somewhat. With Press No. 25 flashbulbs and my test camera synchronized at 1/100 second, my guide number for Kodachrome "A" with 81-C filter was 55, and for Ektachrome "F" without filter, 100.

With photoflood lighting, the situation was reversed, for Kodachrome Type A needs no filter and Ektachrome Type F does—an 82-A, which brings the effective speed down to 16. This is the same exposure index required for Kodachrome "A" with photofloods.

resolution

Without the special equipment and setup necessary for determining the *maximum* resolution of Kodachrome and Ektachrome films, I nevertheless worked out a procedure which would show a practical comparison between the resolving power of the two materials. It consisted of photographing a resolution chart put out by the National Bureau of Standards at a predetermined distance with a Leica M3 camera. Two 20-exposure rolls each of Kodachrome and Ektachrome were exposed at various *f*-stops and various focus settings to obtain the maximum practical resolution with each film. Kodachrome's resolution surpassed that of the Ektachrome. In comparable samples examined under a microscope, we found a resolution of 80 lines per millimeter for the Kodachrome and 56 for the Ektachrome, but remember these are comparative—not maximum— figures. (Visually, and otherwise, the resolution of E-2 Ektachrome has proven substantially greater than the older type E-1 Ektachrome, which is still being supplied in roll- and sheet-film form.)

grain

In order to compare the grain structure of 35-mm Ektachrome with Kodachrome, a series of exposures was made on both films of the same subject. Then, after the films were processed, one of the exposures on each material was selected for comparative examination on the basis of the fact that their density levels and color balance, as determined on a color densitometer, appeared to be equivalent. When the selected transparencies were examined under a microscope, the Ektachrome

(*Continued on page* 150)

NEW *KALART* BC-400

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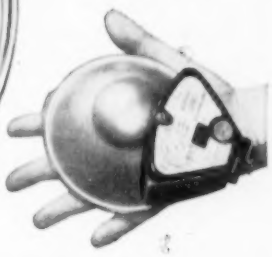

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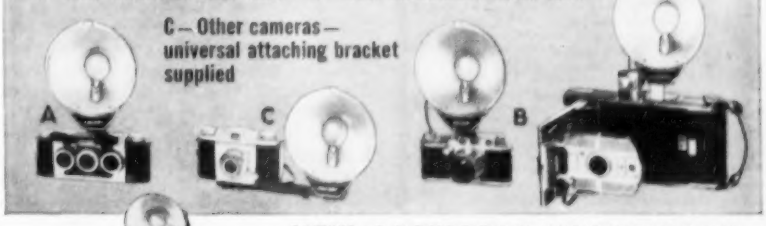

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30 DAY MONEY BACK GUARANTEE

New, Faster Ektachrome

(Continued from page 68)

than either Kodachrome or even the older E-1 film. Kodachrome whites are blue-whites; E-2 whites are yellow-whites. Darkroom (or prison) pallors take on a healthy glow when photographed on E-2 film. Because of a new magenta dye-coupler the E-2 produces richer reds than either of the other Kodak color films. In our tests, oranges which photographed fairly accurately on Kodachrome appeared as flaming red on the E-2 comparison transparencies. Reds which often looked weak or washed out on Kodachrome came through brilliantly on E-2.

Neither Kodachrome nor E-2 Ektachrome nor any other color material yet produced is capable of reproducing color with complete accuracy. Very few color emulsions, for example, can photograph a gray scale with complete fidelity. In one comparison test in which E-2 Ektachrome and Kodachrome were used to photograph a neutral gray area the gray turned out as a blue-green on Kodachrome and as a warm brown on E-2 film.

The resolution and grain pattern characteristics of this new film are superior to E-1 Ektachrome, but inferior to Kodachrome. Kodak's resolution figures are: 110 lines per mm for Kodachrome, 90 lines per mm for E-2, and 40 lines per mm for E-1 Ektachrome. The grain pattern as seen with a low-power magnifying glass is finer on the E-2 than on E-1, but decidedly coarser than Kodachrome. This grain pattern is noticeable to 35-mm addicts who've been shooting Kodachrome for a long time. Had this new film been released first in roll-film sizes it would have been compared solely with E-1 roll Ektachrome and undoubtedly would have received a far more joyous reception. Kodachrome's extreme sharpness and ultra-fine grain have caused many of the 35-mm people to look askance at E-2 Ektachrome. But if this is the only price we must pay for a six- to sixteen-fold speed increase let's pay it without complaining—or go on shooting Kodachrome.

The tungsten emulsion released in the E-2 film is called Type F and it is balanced at 3800 degrees Kelvin for use with clear, wire-filled flashbulbs, without any filter. If you want to use this film with photofloods it is necessary to use a blue conversion filter to raise the effective color temperature of the light source to match the balance of the film. Sam Lang of the well-known Kurshan-and-Lang color service in New York reports that in his experience thus far the blue conversion filter recommended by Eastman, the No. 82-A, is probably a bit too blue and a number 82 may be preferable in many cases. This is slightly mysterious because in the past the 82-A has been a 200-degree converter and the gap between the color temperature of clear wire flashlamps and photofloods (which burn at 3400 K) is 400 degrees. Another point Mr. Lang's experiments revealed is that while the type F does work well with G-E flashbulbs, with lamps made by Sylvania a light yellow conversion filter (the No. 81) seems preferable in nearly all cases as these bulbs are apparently slightly bluer than G-E's.

The trouble with converting Type F E-2 Ektachrome for use with photofloods is that the film speed rating becomes a mere 16, or exactly the same as that of Type A Kodachrome which is balanced at 3400 K to begin with. Type A Kodachrome when used with a No. 5 or 25 flashbulb at 1/100 second with the recommended No. 81-C (yellow) conversion filter gives a guide number of 50. Type F Ektachrome with the same shutter speed and no filtering gives us a guide number of 95, and experience has shown that this is probably a little lower than what it should be. While many will appreciate these higher flash guide numbers and the convenience of being able to use clear flashbulbs without filters, unless Kodak also releases E-2 Ektachrome in a Type A or Type B (3200 K) tungsten emulsion they are going to make a lot of people, including this writer, mighty unhappy.

Some of the findings made by Kurshan and Lang are worth passing on at this time although the authors of these opinions feel constrained to admit that they are of a strictly preliminary nature.

E-2 Ektachrome is a little bit more difficult to process in that the times and temperatures must be adhered to far more rigidly than with the E-1 film. Although some tolerance limits are given on processing temperatures after the first developer, Mr. Lang feels that this should be ignored and the temperature kept rigidly at 75 F. The E-2 film (which must be processed only in E-2 processing kits) will shift greatly in color balance with as little as a minute in the first developer plus or minus. A first developer increase of only two minutes will result in a density increase of half an *f*-stop. Mixing the E-2 chemicals is also more critical and must be done very strictly, by the proverbial "book."

E-2 film (thus far available only in 35-mm) has a curling tendency and should be wound up emulsion side out, to correct this after drying. The film may be lacquered after drying with Kodak motion-picture-film lacquer to protect it against handling.

The E-2 Ektachrome thus gives us a material which is inherently three times faster than other color materials and which offers great promise of pushability. *Life* magazine's color lab has achieved exceptionally beautiful results with advanced emulsion speeds between 100 and 150. The color balance of most of the films exposed at high-speed ratings and given special processing has been excellent. Interestingly enough, the warm yellows which some people object to in normally exposed and processed E-2 transparencies is not nearly as pronounced in most of the high exposure-index tests which we have seen. POPULAR PHOTOGRAPHY is now working on the problem of just how much film speed can be obtained by special processing without sacrificing good color balance or other important photographic characteristics.—

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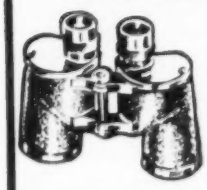

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Adox Thin-Emulsion Film

(*Continued from page* 60)

higher resolution than thick emulsions. The second major advantage of thin films is that they can be made inherently finer grained than normal emulsions.

The reason why most films are made with thick emulsions is partly *speed*, but mainly *latitude*. Thick films are faster and possess a lot more latitude for errors in exposure and development than do thin films. A typical medium-speed heavy layer film like Kodak Plus-X can withstand as much as perhaps 8 or 9 times over- or underexposure and still come up with a passable picture. A thin film like either of the two Adox emulsions cannot. A nice "juicy" emulsion like Kodak Tri-X can produce beautiful available-light quality when exposed at ratings like ASA 650 or 800 in the dimmest light. No thin film can do this. The speed and latitude of thick films (actually the two are so closely interrelated that it's hard to say how much of the "speed" isn't simply latitude toward underexposure) are very important and extremely valuable in many picture-taking situations. Without them, available-light photography would be severely handicapped and much of the important photographic reportage you see in national magazines would be almost impossible. But it must also be admitted that these advantages are paid for with decreased resolving power and increased graininess when they are compared to the results attainable with slow-speed, fine-grain, high-resolution films like KB-14 and KB-17.

The debate engendered by the Adox films is not concerned with their merits, or even with the merits of thin films in general, but rather with the proper way to process these films. Specifically, the central point at issue is the value (or lack of value) of so-called "true-," "super-," and "ultra-" fine-grain developers.

In a series of blasts and counterblasts that have spread over some half dozen issues of the German publication *Leica Fotografie* the anti-fine-grain development point of view has pretty much prevailed. This viewpoint has, as its foremost spokesman, the German photographer Willi Beutler, who started the fracas by wondering in print whether there really was such a thing as a fine-grain developer. Here, briefly, are the main points that Beutler makes:

Modern "true" fine-grain developers all depend to some extent upon a silver solvent action that causes a shaving away of the outer edges of individual silver grain clumps as they are being developed. This makes the grain clumps smaller, and thereby produces finer-grained negatives. But this solvent action, by wearing down the edges, increases the distances between individual grain clumps and undermines resolution. In addition to this, such solvents often attack the image itself and wash away fine detail in the shadow portions of the negative.

Beutler states frankly: ". . . there is no fine-grain developer substance which does not impair the sharpness of the image and no method of fine-grain development which does not rely on a loss of emulsion speed." He attributes the widespread usage of such developers to the slogan "overexpose and underdevelop," and instead offers his own slogan: "Give a short exposure and use soft-working development."

When the argument started, Beutler was developing his films in two formulas which probably date back to the turn of the century. One was a simple metol-sodium sulfite-sodium carbonate solution and the other was a 1:50 dilution of Rodinol, a concentrated developer made by Agfa in Germany which is based upon the moderately active developing agent para-aminophenol accelerated by a healthy dose of potassium hydroxide. With these ancient, grainy concoctions Beutler was achieving very fine grain and extraordinarily high resolution in conjunction with Adox KB-14 and KB-17.

The most serious criticism of Beutler's position came from a manufacturer of films and chemicals, who made the following points. Beutler's venerable brews might be better with these slow films, but with medium-speed ASA 50 emulsions a modern true fine-grain developer was superior. The grain in a developed negative is primarily the function of the emulsion used, but it is also determined by the degree to which development is curtailed. The more it is curtailed, the less the graininess. And some of Beutler's comparisons and examples were characterized as unfair or misleading.

The debate thus focused upon one real issue: *To obtain the best possible image quality should we (1) Use a medium-fast, moderately fine-grain film and true fine-grain development?, or (2) use a slow, very fine-grain film with soft-working development at no loss in emulsion speed and no impairment of resolution?*

At this point let's stop and consider the things which affect the sharpness of a photographic negative, aside from the quality of the lens. These include:

(1) *Subject contrast.* The higher the subject contrast, the better different tonal values stand out from their neighbors and the sharper the picture.

(2) *Negative contrast.* Developing to a higher contrast (or gamma) increases the visual separation between subject values on the negatives and makes sharper pictures.

(3) *The inherent grain structure of the emulsion.* The grainier the film, the grainer the negative will be, with other things constant. A grainier negative is less sharp than a fine-grain negative, all things still remaining equal, and grain breaks image resolution into little irregular patches of light and dark.

(4) *The density of the developed image.* As density is built up during development, so too is graininess. A dense negative is less sharp than a thinner negative possessing sufficient printing contrasts.

(5) *The type of developer action.* Developers which act to dissolve away image-producing silver reduce the resolving power of any film. Typical silver solvents are hypo, ammonium chloride, sodium sulphite in concentrations greater than

about three ounces per quart, sodium or potassium thiocyanate, and two very popular low-energy developing agents, paraphenylenediamine and (to a lesser extent) ortho-phenylenediamine. It is characteristic of such developers that the grain produced has a soft outline which can not be brought into sharp focus by the enlarger.

(6) *The amount of irradiation produced within the emulsion.* As we have seen in our previous discussion, light scatter inside the emulsion distorts image points on the surface of the emulsion and by making non-image-forming silver developable reduces the film's resolving power.

(7) *Halation.* Halation is caused when diverging rays of irradiated light bounce back off the emulsion support and form shiny halos around bright images. This is not as much of a problem as it once was, thanks to high-efficiency anti-halation coatings or light-absorbing dyes incorporated in the base of most modern films. But it must be remembered that extreme overexposure and/or overdevelopment can bring out even the faint halation ordinarily invisible in properly exposed and developed film.

(8) *The length of the exposure.* With extremely short exposures only the point at which light rays from the lens strike the emulsion will be developed. Very long exposures will result in development of all or most of the silver particles within the emulsion that were struck through irradiation. (This situation must, at least to some extent account for the experience of many photographers who have found that pictures made with high-speed electronic speedlight units are noticeably sharper than pictures made with the same cameras and lenses and other sources of illumination. Extreme overdevelopment of electronic flash negatives will cancel out this advantage by causing irradiated silver to be developed.)

In order to find out what Adox thin films can do, as well as to test the theories of Willi Beutler, the writer has exposed several hundred rolls of KB-14 and KB-17 with all kinds of subjects and under many different lighting conditions for more than four months. These films have been developed in some three dozen American and European fine-, super-fine- and not-so-fine-grain developers for immersion times running from absolute under- to complete overdevelopment. And we must say that both the Adox films, and Mr. Beutler's theories, have come through with flying colors.

Throughout these tests two control films and two reference developers were used for purposes of comparison. The exposure controls were the two outstanding American medium-speed medium fine-grain films, Ansco Supreme and Kodak Plus-X. The reference developers were D-76, which is the yardstick against which all other developers are usually measured, and May & Baker Promicrol, simply because it happens to be our favorite all-around developer, and we believe, the only developer that licks D-76 at its own game.

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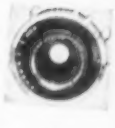

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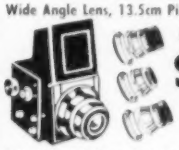

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Xenogon) permitting our bracket-mounted enlarger to give 48-diameter blow-ups. Three types of enlarger light source were used: an Omega B-6 with incandescent bulb and triple-condenser system; the same machine with an Aristo cold-light unit; and an Eastman Kodak Precision A, which (in our opinion anyway) is a semi-diffusion condenser enlarger. All prints were made on straight No. 2 enlarging paper or on Varigam with no filtering. Kodabromide, Velour Black, and Ansco Jet papers were used. The purpose in each case was to obtain a true representation of the negative quality in question through straight printing technique with no burning-in, holding-back, or other manipulation being resorted to in any case—although we must admit the temptation was often great!

Our initial test is worth describing because it outlines the procedures that were more or less followed in all of the succeeding tests; also, because it set the pattern for most of our later findings. The test subject was a scene containing a house, some trees, and a wide expanse of lawn containing miscellaneous items, including a parked automobile. This inspiring vista contained an excellent grouping of high-, medium-, and low-contrast areas. Careful incident- and reflected-light readings were made with two exposure meters, first at the subject and then from the camera position, about 70 yards distant. The pictures were made from this distance with a 50-mm lens in order to produce small images that would be likely to break up under severe enlargement. During the shooting, our super-reliable wife (a Retina IIa type) held the Weston meter on the subject and assured us that the needle was rock-steady. Three rolls each of Plus-X, Supreme, KB-14, and KB-17 were shot in rapid succession, working the double-stroke lever of an M-3 Leica rapidly so that lighting conditions were not given a chance to vary during the shooting.

Because this was our first test, we played strictly by the book, exposing KB-14 at ASA 16, KB-17 at ASA 32, and the two American control films at ASA 50. Exposure variations were made by changing the lens diaphragm opening, and the same shutter speed was used throughout to eliminate any reciprocity-failure complications. Back in the darkroom, the rolls were cut up into short strips of six to eight exposures and developed simultaneously in batches of four strips for each trial development. Ten developer formulas were used in this test: D-76, Promicrol, D-23, Rodinol 1:50, and six well-known branded fine-grain developers.

The best Plus-X and Supreme test strips were, of course, quite fine with plenty of gradation and a grain pattern running from fine to moderately fine. The Rodinal strip was by far the grainiest, but to our surprise, the 30-diameter enlargements made from these negatives indicated that the Rodinal was by far the sharpest. Close examination of the other prints revealed that the greatest sharpness (after Rodinal) was produced by D-76 and Promicrol, with D-23 and the fine-grain six falling off in sharpness in the low-contrast areas.

Turning to the Adox films, we picked what looked like the best KB-17, D-76 negative and promptly experienced our first difficulty with Adox film: At 30 diameters magnification, it was extremely difficult to focus the enlarger on the grain pattern which is standard practice for optimum sharpness. Adox was remarkably fine-grained.

	KB-17 rated at ASA 50 (and 40 tung.)	KB-14 rated at ASA 25 (and 20 tung.)
for subjects of average contrast		
D-76	10-12	8-10
Promicrol	8-10	7-9
P-60	8-10	6-8
Minicol	8-10	6-8
X-33	9-12	8-10
Microdol	10-12	8-10
Neodyn Blue*	20-24	12-20
Neodyn Red*	12-16	8-12

In all cases temperatures are 68-70 F with intermittent agitation, three or four shakes per minute.

*These times for developing two rolls simultaneously. Consult Neodyn instruction sheet.

Many photographers fail to get the most out of their equipment, and even malign the quality of their miniature cameras and lenses, because they do not focus the enlarger properly. You must focus on the grain pattern that every negative has, no matter how fine or how coarse. The grain is the stuff of which the image is composed. Its salt-and-pepper pattern is made up of silver grains which have clumped together (salt) and spaces left in the emulsion after their movement (pepper). Unless you are in-focus on the grain, you're not truly in-focus on the image.

The near-grainlessness of the Adox prints was sensational. Even the grainiest KB-17 negative, (Rodinol again), was ridiculously fine-grained. Never before had D-76 and Promicrol performed for us in this gentle way. The prints from the six fine-grain proprietary developers contained only the faintest hint of grain when examined from the minimum distance the eye permits. They looked like nothing so much as black-and-white Kodachromes. But the resolution wasn't what it was cracked up to be. With KB-14 and KB-17, four of the developers—Rodinol, D-76, Promicrol, and one of the fine-grain six, F-R's Super X-33 formula—showed very slight improvement over their best Plus-X and Supreme performances. D-23 and the remaining five fine-grain soups gave pure mush.

In the next series of tests, we attempted to remedy this situation by bracketing our exposures first by full *f*-stops and then by half stops. In a short time we were convinced that unless KB-14 and KB-17 are given ½ stop less exposure than is called for by their ASA 16 and 32 ratings, overexposure will almost always

result. This means rerating KB-14 at ASA 25 and KB-17 at ASA 50. As we shall shortly indicate, under certain conditions and with certain developers these ratings should be adjusted to accommodate unusually high or low subject contrasts. But as general exposure indexes, they have been found very reliable with all of the developers found suitable for Adox KB-14 and KB-17.

It is important to note here that these exposure ratings do not mean the same thing that the ratings for normal thick-emulsion films mean. Rating KB-17 at ASA 50 does not mean the same thing as rating Plus-X or Supreme at ASA 50. Both of these standard films can easily withstand at least three stops underexposure and two stops overexposure without a tremendous sacrifice either in shadow density or grain quality when development is altered to meet the problem. Neither of the two Adox films even begins to approach this wide tolerance. If KB-14 is exposed at ASA 25 or KB-17 at ASA 50, these thin films will give much better detail resolution than Plus-X and Supreme. But one stop (or sometimes only a half a stop) overexposure can easily wipe out this advantage in resolution, and a similar amount of underexposure will result in a serious loss of shadow densities for which no amount of additional development will compensate.

Shooting with these films on average sunny days with careful meter readings revealed the average KB-17 exposures to vary between $f/5.6$ and $f/11$ at 1/50 second. The exposures on the full stop slower KB-14 varied between $f/4$ and $f/8$ at the same shutter speed.

As a general rule, when you desire the finest grain possible, "overexpose and underdevelop" is a false and pernicious doctrine. At best, this technique will do nothing for fine grain, but often it will actually result in worsened grain structure. This idea of blasting the film with a lot more light than it needs, and then slyly plucking it from the developer as the image rushes up, characteristically results in poor definition, mushy middle tones, illegible shadow detail, and pasty highlights when it is used for subjects with average or less-than-average lighting contrast.

However, it does have great value as a *temporary expedient* to cope with very contrasty situations. By overexposing and underdeveloping we can easily tame contrasts which exceed a ratio of 30:1 and also compress the most contrasty lighting of all, backlighted subjects, into a printable range. The idea is that exposure does proportionately more to the shadows while development does proportionately more to the highlights.

Before tackling the exposure problems resulting from the decidedly narrow latitude of Adox films, we ought to get into the matter of suitable developers for these films. This was by far the most difficult part of our assignment, and until the last few weeks of testing we studiously avoided people who persisted in asking us what they should use for developing Adox films. Out of slightly more than three dozen assorted developers we

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are able at this time to recommend only seven—four being old favorites and three, newcomers.

There were three main causes for our not mentioning some thirty well-known U.S. and foreign developing preparations. The first and most frequent was a serious impairment of resolution ascribable to a silver-solvent action of the developer. The second reason for omitting a number of formulas was that while they did perform adequately, they were either difficult to obtain, or required ingredients that were difficult to obtain; or that they presented special problems in mixing, keeping or use which were simply not worth the extra effort. The final category of rejected developers includes a number of preparations in which the only similarity we could discover between a large number of samples was the label.

In the event that the suspense is becoming a large bore, here's our little list of O.K. developers for use with the two Adox emulsions:

Kodak D-76
May & Baker Promicrol
Clayton P-60
F-R Super X-33
Kodak Microdol
Edwal Minicol
Tetenal Neodyn

D-76 and Promicrol give very high resolution and fine grain on both KB films. For the contrastier KB-14, D-76 is not advisable unless subject contrast is very low. Both developers work wonders on KB-17, with no blocking problems.

Clayton P-60, is an American formula built around the new developing agent, Phenidone, recently patented and issued by Ilford in Great Britain. Phenidone allows the formulation of active developers at lower alkalinities than were heretofore possible and, in combination with hydroquinone, produces a softer working action than corresponding metol-hydroquinone combinations. The resolution of both KB-14 and KB-17 with this developer is quite similar to that of both D-76 and Promicrol. P-60 is somewhat finer-grained and softer than either of the two other developers, and it is particularly suitable with KB-14.

Three old-line fine-grain soups—X-33, Microdol, and Minicol—all deliver less grain than any of the developers yet named, but about the same as P-60. These developers all exhibit some loss of low-contrast resolution with KB-17. But teamed up with KB-14 and subjects of strong contrast, they prove capable of excellent detail resolution. Whatever silver-solvent action may occur during development with these formulas appears to be effectively counterbalanced by KB-14's high emulsion contrast plus high subject lighting contrast. In addition, they almost totally eliminate the danger of blocking-up with this film.

All of these six developers produce excellent results when handled intelligently. But the developer that licks everything hands down, when it comes to squeezing the last millimicron of quality from KB-14 and KB-17, is Mr. Beutler's new developer Neodyn which was designed specifically for these films and is now being manufactured by the Tetenal company in Germany, and will probably soon be generally available in this country.

Neodyn is actually not one but two separate developers which are designated Neodyn Red and Neodyn Blue. Both come in little 30-cc vials of stock solution which are diluted in from 10 to 20 ounces of water. Developing times are given for each dilution for processing (1) one roll of film, (2) a second subsequent roll of film, and (3) two rolls simultaneously. Once you've taken the second roll out of the developer it should be discarded.

Neodyn Red is a high-contrast developer giving maximum resolution, no loss of emulsion speed, and grain very similar to D-76. The Red is only intended for KB-17 and faster emulsions, but in our experience a further admonition is required: Use it only with very flat subject matter or for creating intentionally exaggerated contrasts with subject matter of average contrast.

Neodyn Blue is a low-to-medium contrast developer which gives very fine grain and no loss of emulsion speed, as well as maximum resolving power. Although the instruction sheets recommend Neodyn Blue only for KB-14 we find this to be an ideal developer for KB-17 as well. On KB-14 the Blue completely obviates any highlight-blocking problems, and we produced some excellent results from 80:1 subject lighting, even with intentional overdevelopment. Neodyn Blue produces unbelievably beautiful negatives on KB-17 in all but the very flattest lighting conditions. In these instances a switch to the Red is advisable.

Neodyn Blue is the kind of flexible developer with which the image creeps up on you very slowly. Although 20 to 24 minutes are the immersion times we found best for average subjects (with intermittent agitation), in order to increase contrast we have actually extended development as far as 40 minutes with only a small increase in graininess. And, within a range of about 18 to 30 minutes, the developing time can be adjusted solely in relation to the type of negative contrast you want, with no thought being given to grain at all. Adox negatives developed in the Blue have a dullish-brown cast which seems to mask a lot of detail in the shadow areas which you can't readily see by holding the negatives against a lightbox but which is revealed in prints made with the most diffuse enlarger light sources.

Our speed ratings of ASA 25 for KB-14 and ASA 50 for KB-17 have proved themselves repeatedly under a wide variety of normal shooting conditions. In the face of extreme contrast conditions, however, it is often desirable to make an adjustment in exposure and development.

Despite what you may have recently read elsewhere, the way to increase negative contrast on a dull gray day still is to *decrease* exposure and *increase* development. For most of the developers mentioned here, a decrease of about ½ stop in exposure coupled with an increase of 10 to 20 percent in development will usually suffice. Neodyn Red is inherently

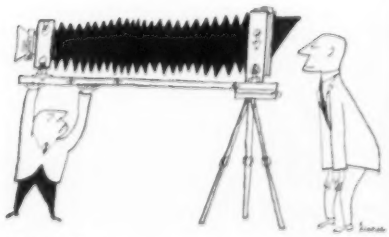
so contrasty such adjustments are rarely necessary; and in the case of D-76, two minutes added immersion time without any exposure decrease often is all that is needed.

Very high contrasts can be handled satisfactorily by increasing exposure by ½ or even one full f/-stop and cutting development about two minutes for each ½ stop increase in exposure. In the face of really high contrasts, KB-14, D-76, and Neodyn Red should be avoided. The problem of accommodating abnormally high subject contrasts is not a hard and fast kind of thing but rather one which must be worked out in terms of individual experience and personal preferences. While they do take on greater importance with thin films than with standard films, these problems are easily met once they are recognized.

Largely because of its superior latitude (in comparison to KB-14) our preference is strongly for KB-17, particularly when developed in Neodyn Blue. This combination is very easy to live with, and only moderate care in exposure and development is usually required. With the Blue, KB-17 can be made to yield a wide range of contrasts from very flat to medium high, and resolution and fine grain are phenomenal throughout the entire range. The ASA 50 speed index, of course, does limit the usability of this combination to fairly well-lighted subject matter. With an exposure index of about 40 for tungsten illumination this pair does fine work in artificial light, particularly with photofloods.

KB-14 should be regarded as more of a specialist than its more easy going and somewhat speedier relative. This super fine-grain, maximum-resolution film requires a great deal of exposure at our ASA 25 daylight film-speed rating, and this exposure must be fairly accurate if KB-14's special talents are to be fully appreciated. But if you can shoot color successfully, you need have no worries about KB-14. Indoors, with a speed rating of about 20, it is a very capable performer, especially on still-life and technical subjects. It is our top choice for detailed macro-photography. Indoors or out, if you know that you've got enough light to feed it, KB-14 can be relied upon for the maximum photographic quality possible from the miniature camera.

Willi Beutler's slogan "Give a short exposure and use soft-working development without silver solvents," plus a roll of either of the two Adox films in your 35-mm camera, will give you fine-grain, high-resolution negatives that will print like big ones.—



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The new GRAPHIC 35

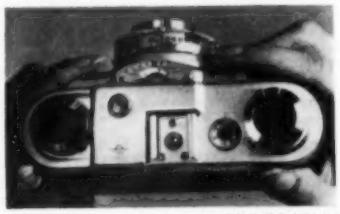
35-mm camera has push-button focusing, novel flash exposure system for color

FINGER-TIP, push-button focusing, and a color coding system for flash color photography are two of the interesting features of the new Graphic 35 camera manufactured by Graflex, Inc., Rochester, N. Y. With this camera, color flash photography and focusing are greatly simplified for the amateur photographer.

The coupled rangefinder has a button on each side of the lens on the front of the camera. By pushing one or the other with the index finger of each hand, the lens is moved forward or backward, and the camera is focused. This system allows for faster focusing, and permits shooting immediately after focusing without having to move hands or fingers from one position to another. The second finger of the right hand rests on a large trigger release at all times. The rangefinder is of the split-image type.

The color coding system, called Spectramatic, operates with Kodachrome, Kodachrome Type A, Ansco Daylight and Tungsten, (but not the new Ektachrome) and flashbulbs or electronic flash. After the shutter is set for 1/50 second, the camera is focused on the subject. A dial on top of the camera shows a different color for different distances focused on. An- (*Continued on next page*)

Graflex 35 camera (above) is designed for "top operation." All settings can be made while looking down at top of camera. Focusing (below) with new rangefinder system is accomplished by placing index finger tips on the buttons which are on each side of the lens.



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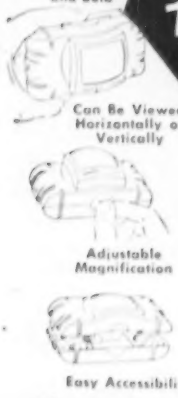

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other color dial is also on the aperture-setting scale of the lens. By placing the aperture arrow on a color corresponding to the one on the focusing dial, the camera is ready for shooting flash color pictures. This system does away with guide numbers and arithmetic.

The camera, with leather carrying case and Graflash P-L flashgun (which operates either on two penlight batteries or a BC-type battery), will sell for $89.50.

Equipped with a Prontor shutter and 50-mm f/3.5 Graflex lens (both made in West Germany), the camera has eight shutter speeds from 1 to 1/300 second, bulb setting and provision for a cable release. The camera has a double-exposure-prevention device but allows for deliberate double exposure. The shutter is cocked manually, and a red dot appears to indicate when the shutter is cocked. On the shutter are M and X settings which allow it to be synchronized with flashbulbs and electronic flash units. A self-timer that allows 10 seconds before releasing the shutter appears as a V marking on the shutter.

The camera is compactly designed. To eliminate wires from the flashgun to the shutter, the clip-on flash shoe provides for direct internal contact between flashgun and shutter. There are no awkward projections on the camera body, and most controls are easily manipulated from the top of the camera so that it need never be turned around or upside down for setting. The depth-of-field scale is also on top of the camera. It is so plainly marked that at a glance the depth of field of the lens at a certain aperture setting can be judged.

Another unique feature of the camera is the exposure counter. Instead of telling you how many pictures you have taken, it tells how many exposures are left.—

Cameras for Color

(Continued from page 75)

of the same design. If you are in doubt about the quality of a particular lens, make sure you can buy it on free-trial basis. No matter what you've heard about any lens, if the final color pictures made with it are sharp and satisfactory to you, then it's a good buy. On the other hand, don't buy a highly touted lens unless it produces the results you demand.

Most modern cameras are synchronized for flashbulbs and/or electronic flash.

If you need a lot of light to permit flesh shooting at high shutter speeds a camera with a between-the-lens shutter is preferable to one having a focal-plane shutter, because with the latter type the total light output of the bulb is spread out over a longer time.

If your plans include using electronic flash with a camera having a focal-plane shutter keep in mind that this type usually is "synched" at slow speeds ($\frac{1}{25}$ or $\frac{1}{50}$ second and slower). This may lead to a double image where the existing light is strong enough to produce an image at the shutter speed you use. The flash will then register a sharp image, the existing light a blurred one.

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able feature which keeps you from wasting precious color film and losing important shots. If you want to experiment with trick double exposures make sure the camera incorporates a device for unlocking or by-passing the double-exposure-prevention mechanism.

In flash work you may have another occasion to utilize this by-pass feature. If the bulb fails to fire, and the existing light is too weak to make an impression at the aperture and shutter speed needed to make the flash picture, then being able to reset the shutter will enable you to reshoot the same frame of film. This is especially desirable when your camera is loaded with relatively expensive color film.

If you choose a camera with bellows construction, make sure that the ordinary handling, setting the shutter, lens, opening, etc., doesn't make the front wiggle. If the camera is a second-hand one be sure the bellows is free from cracks or holes.

Interchangeable lenses are even more of an advantage to the color photographer than they are to his fellow worker in black-and-white because color requires that cropping and composition be exactly right at the moment of exposure. If you buy a camera with interchangeable lenses make sure that special finders (or an adjustable finder) are available for the various lenses. These finders preferably should have some device to compensate for parallax. With a single-lens reflex, of course, you see exactly what you get no matter what lens is placed on the camera.

If you wear glasses make sure that when you look through the peep sight of an eye-level camera you can see the entire scene properly. No part of the finder image should be cut off.

A camera of the simpler type may be your best choice if you're a beginner, not only for economic reasons but also because a less elaborate camera will teach the fundamentals of camera operation without confusing you with a multitude of levers and gadgets. However, if you feel that you wish to make photography your profession or know that you are seriously interested in it as an avocation, then don't hesitate to buy the best model you can afford.

In either case don't try to get too much out of your camera the very first time you go out with it. Take things easy, learn step by step. Reserve the trick, difficult shots for later on.

No matter which camera you choose many accessories are available to help you do specialized work. Especially helpful for color photographers are the various adapter backs which permit roll film to be used with press-type camera or 35-mm or 828 with a roll-film camera. Your photo dealer will be glad to advise you in choosing the accessories that you need.

Last, but very important—read carefully the instruction book that comes with the camera and the data sheets included with the color film and flashbulbs. Learning what's in these and following the directions carefully is your first step to making good color pictures.—

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Rebold B. C. Pocket Folding Flash—Newest imported design, with folding bracket, fits all cameras.
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Indicate camera Flash Gun to be used with. All above Flashguns are for cameras with internal synchronization. If your camera is not internally synchronized, add $3.00 to the above price, and we will supply with the flashgun, a device that will synchronize your camera through the cable release socket.

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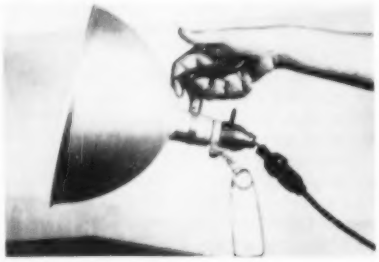
photo tips— short cuts to better pictures

For Easier Pouring

A quart-size ink bottle, with pouring cap, will make a handy container for darkroom replenishing fluid. The cap facilitates pouring small quantities of fluid without spilling, and with ease and exactness. Bottle and cap should be cleaned thoroughly to remove every possible trace of ink before being used for other fluid, and the washer in the cap should be replaced with the type of washer that is used in a garden hose.—*George B. Grubbs, Port Huron, Michigan.*

Handling Hot Reflectors

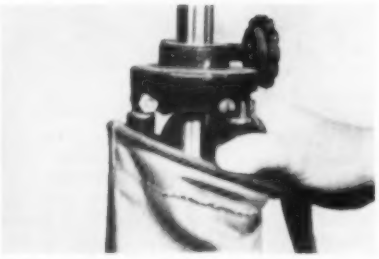


Waiting for hot reflectors to cool off sufficiently for handling means wasted time—and not waiting frequently results in burned fingers for the photographer. By adding a handle of the type shown in the accompanying photograph, the reflector can be manipulated easily and safely. The handle illustrated was salvaged from a broken glass coffee-maker, and the metal band was cut down to fit the neck of the floodlamp.—*Hugh Lineback, Stillwater, Oklahoma.*

For Clean Sponges

Sponges used for squeegeeing may be misplaced in the darkroom, and if they pick up dirt or grit they become liabilities rather than useful accessories. Use of a small jar with a plastic lid (as shown here) provides a stationary container that keeps sponges clean, yet readily available. The rustprof lid is attached to the darkroom wall with a couple of brass screws, and the jar of sponges can be removed and replaced easily.—*W. E. Garrett, Columbia, Mo.*

Light-Weight Golf Bag for Tripod



Whenever a fairly heavy tripod has to be carried any appreciable distance from house or car, the task of transporting it can be made much easier by using a golf bag. A medium size bag, of the light-weight, cloth variety, will accommodate the average tripod, and a strap for carrying over the shoulder helps to distribute weight evenly and gives the photographer the advantage of being able to use both hands for carrying other equipment. —*H. Leeper, Canton, Ohio.*

Hold Pouring Funnel Steady

Pouring solution from a wide-mouthed bottle into a developing tank usually requires a funnel—particularly if the bottle is large and heavy. The funnel can be held securely in place by means of a 6-inch length of rubber tubing—one end of the tubing is slipped over the funnel spout and the other end inserted through the opening in the film tank, as shown here. Thus, both hands can be used to manipulate the bottle.—*Hugh Linebeck, Stillwater, Oklahoma.*

Color Clinic

(*Continued from page* 34)

we have seen is the use of a "slide-bar" which is a metal bar with a part that holds the camera and slides the camera to two predetermined accurately spaced points, depending on the distance from the subject for each exposure. Many of the stereo books tell how to make these yourself, and there are several of them on the market. One that I use is made by the Wizard 3-D company of Des Moines, Iowa, and there are several others.

These ready-made bars are quite easy to use. The one disadvantage is that the separate shots have to be made one after the other instead of simultaneously, so they can't cope with moving objects. However, for close-ups of hands or medical specimens you can work so fast that you can get your two shots before the subject moves.

•

TECHNICAL NOTE: Since Eastman Kodak released their Ektacolor film in daylight and Type A rolls, there has been some confusion and inquiry about processing and use of this material for Kodacolor prints. As we understand it, this film is the same as Kodacolor film. However, if you buy it as Ektacolor you have to process it yourself, or have it done in a commercial laboratory, and you end up with a color *negative* suitable for making positive transparencies. If you buy it as Kodacolor, it will be processed by Kodak and is suitable for Kodacolor prints. It's a matter of contrast in processing we're told.—▶

CHRISTMAS CARD CONTEST WINNERS

Entries received in our 1954 Christmas Card Contest were better than ever. As is usual, black-and-white predominated, but there was a good percentage of color, also. Much careful work and selection by the judges resulted in their final choice of the best ten cards, entered by the winners listed below. POPULAR PHOTOGRAPHY is sending a check for $25 to each of them.

Leslie A. Campbell, Belchertown, Mass.
Arthur Center, San Diego, Calif.
Gloria Gebest, Bronxville, N. Y.
Robert V. George, Towson, Md.
F. L. Lemaire, Amsterdam, Holland
Donald Morgan, La Jolla, Calif.
Paul Riihimaki, Rouyn, P. Q., Canada
Victor F. Viccajee, Calcutta, India
Marjorie Weber, Woodcliff Lake, N. J.
Maynard F. Wolfe, N. Y. N. Y.

As in our former Christmas Card Contests, entries were received from all parts of the United States, and from a number of other countries, including Australia, Africa, Belgium, Canada, England, Germany, France, Greece, India, Japan, The Netherlands, New Zealand, Scotland, South America, Central America, Switzerland, Sweden.—▶

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A rare projector, this La Belle. You get more when you buy it—spend less as you use it! Compare it to any other brand—for example, a projector priced at $66.50—and you'll see it's true! By the time you own just 500 slides, you'll have spent up to $31.50 on this lower-quality projector. With the La Belle, *you will have spent only $11.20 to store and show the same number of slides!* And remember—no other projector has touch system!

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SEPARATE PRIZES for Black-and-White, and for Color.

NO LIMIT on the number of entries from any contestant.

TRAVELING EXHIBITS to be shown in principal cities of the world.

RULES OF THE CONTEST

1 The Contest is open to all persons, except employees of Popular PHOTOGRAPHY, Ziff-Davis Publishing Company, and their families. CONTEST OPENS MARCH 8 and CLOSES JULY 1, 1955.

2 **An entry fee of $1.00 must accompany each package** of pictures submitted. There is no limit on the number of pictures included in each package, or the number of packages submitted, but each package must contain its own entry fee. Entry fee may be paid by check or money order. Postage stamps not acceptable for entry fee.

3 There will be a Black-and-White Division and a Color Division; each will be judged separately. Any number of black-and-white prints, color prints, or color transparencies may be submitted by any entrant provided each package is accompanied by an entry fee of $1.00, in accordance with Rule 2, and in conformity with the following regulations: It is advisable to submit color prints and/or transparencies separately from black-and-white entries. There are no restrictions as to subject matter or size in either Division, although 5x7 or larger prints are preferred.

4 Prints may be either mounted or unmounted; this is optional with entrants. Be sure to print name and address on mounts of both black-and-white prints and color transparencies.

5 Pictures which have been published in, or accepted for publication or are under consideration by any photographic magazine other than Popular PHOTOGRAPHY or PHOTOGRAPHY ANNUAL are not eligible. Publication in any other medium does not make prints or color transparencies ineligible.

6 Each print or transparency must have secured to it a filled-in entry blank as provided here, or facsimile thereof. Please print or typewrite the information requested on the blank. Additional entry blanks are obtainable from photo dealers and finishers, or direct from the Contest Editor of Popular PHOTOGRAPHY if request is accompanied by a self-addressed and stamped envelope.

7 All prints and transparencies will be held for judging after July 1, 1955, and no entries will be returned until after announcement of the winners has been published in the December, 1955, issue of Popular PHOTOGRAPHY. Pictures which did not win prizes will then be returned as quickly as possible, provided that self-addressed and stamped envelope, or addressed label and postage were contained in the same package in which each lot of entries was sent. DO NOT SEND POSTAGE

SEPARATELY for return. The Contest Editor cannot enter into correspondence of any kind regarding entries.

8 Prize-winning pictures, including all reproduction and promotional rights, become the exclusive property of Popular PHOTOGRAPHY. All entrants who win prizes will be required to furnish original negatives before prizes are given, as well as model releases where necessary. All prize-winning negatives become the exclusive property of Popular PHOTOGRAPHY.

9 The contest will be judged by the editors of Popular PHOTOGRAPHY under the chairmanship of Mr. B. G. Davis, President, Ziff-Davis Publishing Co. Decision of the judges is final.

10 Address all entries to Contest Editor, Popular PHOTOGRAPHY, 366 Madison Avenue, New York 17, N. Y. Final entries must be postmarked not later than midnight of July 1, 1955. Prize winners will be announced in the December, 1955, issue of Popular PHOTOGRAPHY. While exercising the utmost care in handling entries, Popular PHOTOGRAPHY assumes no responsibility for loss of or damage to Contest entries nor for loss of entry fees.

11 Prizes will be United States Savings Bonds, Series E. Values of prizes listed are maturity values of the Bonds. Prize winners who are not United States citizens will receive, in lieu of Bonds, a check in the amount of the purchase price of the Bond award.

12 FOREIGN ENTRANTS: The foregoing rules apply to all entries, except that prints and transparencies submitted by persons residing in foreign countries are eligible for consideration only if accompanied by an amount sufficient to cover entry fee and return postage. This can be sent in the form of Postal Money Order, Bank Draft, or International Reply Coupons (in sufficient number). These Coupons are sold by most post offices throughout the Universal Postal Union and when properly rubber-stamped by the issuing post office each Coupon is exchangeable (as indicated in several languages on each Coupon) for a "postage stamp or postage stamps representing the amount of postage for an ordinary single-rate letter destined for a foreign country." Thus, each International Reply Coupon can be exchanged in the United States for postage in the amount that would be used for a single-rate letter (not air mail) to the country where the Coupon is purchased.

●

USE THIS ENTRY BLANK

Each one of your entries must be accompanied by a filled-in entry blank provided here, or a facsimile of it. Your photo dealer or your finisher has additional blanks on hand should you need them, or you can obtain entry blanks from the Contest Editor of Popular PHOTOGRAPHY. Your request for more blanks should be accompanied by a self-addressed stamped envelope.

●

**Values given are maturity values of the bonds. Each prize will be accompanied by a certificate of award suitable for framing. This certificate is printed on fine parchment stock and will bear the hand-lettered name of the winner.*

280 PRIZES*

BLACK & WHITE	COLOR	TOTAL
1st $2,000 U.S. Savings Bond, plus Trophy	1st $2,000 U.S. Savings Bond, plus Trophy	$4,000
2nd $1,000 U.S. Savings Bond, plus Trophy	2nd $1,000 U.S. Savings Bond, plus Trophy	$2,000
3rd $750 U.S. Savings Bond, plus Trophy	3rd $750 U.S. Savings Bond, plus Trophy	$1,500
4th $500 U.S. Savings Bond, plus Plaque	4th $500 U.S. Savings Bond, plus Plaque	$1,000
5th $250 U.S. Savings Bond, plus Plaque	5th $250 U.S. Savings Bond, plus Plaque	$500
50 Prizes, U.S. Savings Bonds, each $100	50 Prizes, U.S. Savings Bonds, each $100	$10,000
70 Prizes, U.S. Savings Bonds, each $50		$3,500
100 Prizes, U.S. Savings Bonds each $25		$2,500
		GRAND TOTAL $25,000.

In the event of a tie, duplicate prizes will be awarded.

FINAL CLOSING DATE: JULY 1, 1955

USE THIS ENTRY BLANK (PLEASE PRINT) 1955

Contest Editor, Popular PHOTOGRAPHY
366 Madison Avenue, New York 17, N. Y.

Please enter the enclosed picture in the Popular PHOTOGRAPHY Picture Contest for 1955. It is submitted in accordance with the rules, which I have read.

Name.....

Street.....

Town..... Zone..... State.....

Picture Title..... Have You a Model Release?.....

Where Made.....

Camera Used..... Lens.....

Exposure: Lens stop..... Shutter Speed.....

Film Used..... Filter.....

Lighting..... Paper.....

Published before?..... Where?.....

CAUTION: Be sure to include your entry fee of $1.00 in the package containing your entries (See Rules 2 and 3). If you want your pictures returned in the event you do not win a prize, be sure to include adequate return postage.

PRIZE WINNERS ANNOUNCED: DECEMBER, 1955, ISSUE

Revolutionary speedlight battery

Rechargeable Dormitzer power unit is hermetically sealed; it lasts indefinitely without maintenance

Essential feature of new Synctron 200-B electronic flash unit is a hermetically sealed rechargeable 5-cell Dynaseal battery (right foreground) which requires minimum maintenance.

SOMETHING NEW and exciting is happening in the electronic flash field. A radically different type of rechargeable power cell has just been introduced by the Dormitzer Electric and Manufacturing Company—a development that is going to make many manufacturers and consumers re-examine the factors that have driven the rechargeable storage battery to the brink of oblivion.

The new portable power unit, which comes hermetically sealed in a steel case, is called the "Dynaseal Power Block." It is being supplied in a 3-cell, 3.6-volt pack for the new Dormitzer Synctron 208-B speedlight and in a 5-cell, 6-volt pack for the new Synctron 200-B. Both of these electronic flash outfits can be operated from a-c house lines as well as their self-contained Dynaseal units. The 208-B weighs 5¾ pounds and stores 125 watt-seconds of energy, whereas the 200-B weighs 9 pounds and stores either 100 or 200 watt-seconds, depending upon whether it is set for half- or full-power operation.

What makes Dormitzer's new Dynaseal power supply so important is the fact that it offers the user the main advantages of rechargeable storage batteries (low cost per flash, consistent light output and unvarying recharge time) without the usual wet-cell maintenance headaches. The latter include: gassing, the need to replenish the corrosive electrolyte, and especially the necessity of keeping wet-cell batteries fully charged at all times.

The Dynaseal power unit has an indefinite shelf life. It isn't harmed in any way by long periods of idleness whether it's stored in a fully charged or completely discharged condition. Thus, it need not be recharged immediately after use or during periods of extended storage like wet-cell batteries, lest it destroy itself. In addition, it is impervious to high peak currents and dead-short circuits which can permanently damage the plates of ordinary wet-cell batteries.

Flash speed of 1/5,000 sec was achieved here with Dynaseal-powered Synctron 200-B at half-power; 2 lamps at 15 ft; *f*/16, Polaroid Pro Pan film.

Although the Dynaseal costs about twice as much as ordinary storage batteries, it's lighter and more compact. It has about 25 percent more electrical capacity per charge and can be charged more than 10 times as many cycles as conventional storage batteries. In sum, it's by far the most economical power supply available for portable speedlight units and an extremely powerful one for the weight.

The stability of the new power supply as well as its consistent performance are mainly due to its unusual structure. Ordinary wet-cell storage batteries consist of lead plates immersed in a solution of sulfuric acid (the electrolyte). The active materials of the Dynaseal, on the other hand, are nickel and cadmium (electro-chemically bonded to a solid sintered plate) and an alkali electrolyte. Internally (*Continued on next page*)

generated gases are recombined with the electrolyte in the sealed chamber, and there is never any need to add water or electrolyte, as is so often the case with lead-acid batteries.

Some of the manufacturer's specifications for the Dynaseal battery, for which Dormitzer has exclusive United States and Canadian distribution rights, are almost beyond belief. The normal temperature range is from 20 to 160 F. Its life is in excess of 1,000 charge-discharge cycles; after 800 cycles, the battery is said to retain 80 percent of its original capacity. Apropos of shelf life, it is claimed that a fully charged Dynaseal power supply retains 60 percent or more of its charge after 6 months of storage. Maximum discharge rate is listed as 40 amperes, without damage to the battery components.

Compared to equivalent wet-cell storage batteries for electronic flash service, the Dynaseal weighs only 65 percent as much, and, it is only 48 percent as large. The Dynaseal stores 25 percent more usable energy, so that its nominal life with the Synctron 208-B is on the order of 250,000 flashes, compared to a maximum of about 20,000 for a conventional lead-acid battery used consistently under ideal conditions. Its charging time with a conventional trickle charger working off household a-c is 14 hours from complete discharge to full charge.

The basic Synctron 200-B unit is priced at $290, just $23 more than the former Synctron 200. Thanks to the extra power of the new Dynaseal power supply, however, its recharge time at full power is 17 seconds instead of 25 (and at half-power 7 seconds instead of 10). It's less bulky and lighter than the older unit. In addition, it produces from 125 to 150 flashes per charge at full power (in excess of 200 at half-power) whether or not the unit is flashed frequently or permitted to remain idle for long periods between chargings.

As a matter of interest, a new wholly owned Dormitzer subsidiary, the Dynaseal Lighting Corp. is offering the new power supply in the general lighting field under the name Voltabloc.

Illustrator's Camera

(*Continued from page 78*)

in any single print. The normal prints, as you can see from the four reproduced with this story, can stand by themselves as examples of fine photography.

There is no tracing or copying of the photograph. Smith works freehand, taking whatever liberties he likes with proportion, perspective, and detail. And of course, since he works from black-and-white prints, he can work out his own color scheme.

Does he think color photography may someday take the place of hand-drawn illustrations in magazines? No, says Smith; there is a resistance against the photographic kind of realism for most fiction, some kinds of articles, and a great deal of advertising. But the camera will always be an important tool to the magazine artist.—▶

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WITH CASE, F. E. T.
SLIDE CARRIER

Reflex Details: 300 Watt
Width—7" Height—11½" Length—16½"
Weight—19 lbs. Motor—60 cycle, 110-120 volts, A.C.
Optics—3 removable ground and polished condensers, heat absorption filter, non-tarnishing first surface polished reflector.
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REFLEX—Finest 2¼ x 2¼ metal slide binder on the market. Glasses fit into inner frame, and presto . . . you have a neat, smooth binder for your precious films. Fits all standard carriers on all 2¼ x 2¼ projectors.

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For home processing 4½ Gal. Developing Kit ... 3.95
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★ INTO ROLLS AND SHEETS FOR PENNIES ★

5½" x 20' roll ... $3.95 ... 5½" x 40' roll ... $5.95
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Type 535, dated 1955. Perfect results Guaranteed. 35mm x 27½' $6.50
50'—$10.95
100'—$21.00
(27½'—6 oz. 50' & 100'—1 lb.)

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BUY TWO ROLLS—GET THIRD ONE FREE!
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E. K. Fine Grain Positive '55 Date. Make your own B-W transparencies! ... 100' roll $1.49; 3 rolls $4.00
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Brand New 35mm Bulk Film Loader
Load your own 35mm film for pennies—save dollars! $5.50 plus 22 empty E.K. carts. FREE
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16mm x 100' Daylight Roll. Perfect Quality. We scooped the field on this terrific value! FREE Kodak Processing.

1 Roll (1 lb.) $6.95 3 Rolls (2 lbs.) $20.00

16mm x 100' KODAK SUPER X MOVIE FILM ... $2.98
FREE PROCESSING INCLUDED ..... each
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√ √ 16mm x 50' Super X √ √

12 rolls—$4.95 28 roll can—$8.95 2 cans—$17.00
(12 rolls 2 lbs.—1 can 5 lbs.)
Empty Magazines ... 59¢ ea.; 12 for $6.00
(1 lb. ea. 12—7 lbs.)
E.K. SUPER X 16mm x 50' MAGS. Free Processing. (Wgt. 1 lb. each) ... $2.39 each; 2 for $4.50

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4 x 5 Cut Film—Ansco's Highest Speed—ASA 200—25 sht. box—perfect quality ... $1.49
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New Polaroid 'Films'

(Continued from page 66)

ment of instruction, Kennedy has been sold on it since he first tried it. Before the advent of the picture-a-minute camera, he had to limit his classes to six girls, and even then most of the year was consumed with darkroom instruction; by the time the girls had learned to develop film and make a good print, the term was over, and they had no time for the pictures they wanted to take.

Now it's all different. As the Professor says, "From the very first, perhaps only one-third of the lecture is devoted to technical details, and the other two-thirds of the time can be concerned with the artist's approach to the next assignment." In this way, his course becomes one in the art, rather than the technique, of photography.

Last year 27 girls took Professor Kennedy's popular course. Only 11 were art majors; the rest came from such widely varied departments as education, history, and zoology.

Smith has enough Polaroid Model 95 cameras so each girl can keep one for the duration of the course. There are a few Pathfinder models (with f/4.5 lens, rangefinder focusing, and fast shutter speeds) for situations that require more precision and faster shooting. But almost all class work pictures are made with the Model 95; this is in line with the course's emphasis on the picture itself rather than the way it is made. Flash and speedlight equipment is also available.

The class meets once a week for two hours. Kennedy gives basic instructions in the use of the camera as it is needed, but most of the class time is devoted to the subject of the following week's assignment. It might be "Patterns," "Character in Action," or "Self-Portraits." During the week, each girl has an individual conference with the teacher. At the next class meeting, everyone's pictures are examined and discussed. There is detailed instruction in what makes each picture good or bad. Kennedy helps each girl eliminate about a third of the week's shots; the rest are hung for exhibition in a corridor of the art department. This is a popular gallery with all Smith girls; not only other art students, but those in all fields of study come to see the photography students' best work.

Other academic departments co-operate in furnishing subject matter for Professor Kennedy's girls; students and teachers of the dance are particularly helpful. And in Northampton it has become a common sight to see a Smith girl unfolding her "magic" camera to take a landscape or an outdoor portrait, then a minute later peeling a fine finished print from the back of it.

Smith College has been an excellent proving ground for the three new Polaroid films. The girls' superior results with them are an indication that they will win wide acclamation, and extend the frontiers of picture-a-minute photography immeasurably. Smith's example should certainly inspire other college art departments to add the esthetics of photography to their teaching programs.—

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new books

THE REVERE TAPE RECORDER GUIDE by Kenneth S. Tydings. Published by Tydings Book Publishing, Inc., Long Beach, N. Y. Paper bound, 5 x 6⅝, illustrated, 128 pages, $1.95.

It is fitting that the first layman's hobby book on tape recording should be based upon the pioneer line of "home" tape recording equipment made by the Revere Camera Company. The original Revere T-100 magnetic tape recorder, still available, stimulated more competition in the popular-price field than any other equipment that has ever appeared. It is now one of 13 recorders offered by the manufacturer. Mr. Tydings' handbook picks up where the instruction literature leaves off. It is practical in the extreme and free of technicalities—perhaps to the point of oversimplification.

FRED ARCHER ON PORTRAITURE, by Fred Archer. Published by Camera Craft Publishing Co. Paper bound, 6¾ x 9¾, illustrated, 224 pages, $5.75.

A second edition of Fred Archer's popular book dealing with all phases of photographic portraiture, profusely illustrated and diagrammed.

FASHION'S FOLLY, by Leslie Lieber and Toni Miller, published by The Vanguard Press. Paper bound, 8 x 11, illustrated, $2.

High-fashion photographs are brought down to earth in an amusing manner with the clever use of captions.

THREE DIMENSIONAL PROJECTION, by Earl E. Krause. Published by Greenberg: Publisher. Paper bound, 5 x 7¾, illustrated, 125 pages, $1.95.

This book deals mainly with stereo slide shooting, mounting, and projecting, covering Realist-type slides, View-Master reels, and several close-coupled stereo systems. Several 3-D movie methods and devices are described.

COLOR—HOW TO SEE AND USE IT, by Fred Bond. Published by Camera Craft Pub. Co. Paper bound, 8¼ x 10¾, illustrated, 167 pages, $8.75.

Based upon 30 years of experience with color film, Bond has written this book for those who desire a better understanding of color, for pleasure or profit.

TWO LITTLE BEARS, by Ylla. Published by Harper & Brothers. Paper bound, 9¼ x 11½, illustrated, 32 pages, $2.50.

Ylla, famed animal photographer, has written a story about the adventures of two bear cubs, illustrated with her own pictures.

THE FLOWERING CACTUS, by Raymond Carlson, photographs and technical data by R. C. and Claire Meyer Proctor. Published by McGraw-Hill Book Co., Inc. Paper bound, 9 x 12, illustrated, 96 pages, $7.50.

Cactus of the American Southwest are captured in 115 photographs (81 in color), with a chapter on the technique of recording their beauty on color film.—▶

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Some of the finest camera work and composition to be done in CinemaScope are seen in *East of Eden*. Ted McCord (top picture), cameraman, and Kazan discuss composition during shooting of the film. Kazan (second picture) sights through viewer to check actors' positions. Viewing through camera (third picture), Kazan sees what film actually will get. During night shooting session (fourth picture), Kazan gives production crews directions by way of a microphone.

ELIA KAZAN says:

By JOHN DURNIAK

In an exclusive interview with POPULAR PHOTOGRAPHY, one of the outstanding directors in cinema today answers six questions about amateur movie photographers and their future

Working with Julie Harris and Richard Davalos, director Kazan stresses a point. Low-intensity lighting used in this scene is typical of indoor lighting throughout the film.

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movie section

Amateurs can be great

Before cameras start shooting the locker-room scene of *East of Eden*, director Elia Kazan (right) rehearses the action with actor James Dean.

THE amateur motion-picture photographer can be great," said Elia Kazan, award-winning director, during an interview with POPULAR PHOTOGRAPHY. Kazan, director of *On the Waterfront* and *East of Eden* (his latest film for Warner Bros.), spoke of the possibility of amateur photographers banding together to form "Little Theatre"-type groups similar to the organizations that existed for legitimate theatre during the 1920's and 1930's in the United States.

The director talked with great enthusiasm about the amateur photographer. "If he makes films about things close to him," he said, "and about the things he knows best, he can produce imaginative, worth-while motion pictures." These pictures, he said, would bridge the gap between the commercial films and home movies.

During the interview, Kazan moved about his Broadway office, first sitting on the window sill, then dropping into a soft lounge chair, nodding or making motions with his hands to emphasize the points he was making in his conversation.

"Frankly, I never go to openings of any films but the Disney-type, true-to-nature films," he said. "They are wonderful and interest me no end. And, by the way, many of Disney's cameramen came up through the ranks of the amateur nature photographers."

There was little hesitation between questions we asked and the answers Kazan gave. Examples, backing up his ideas, came effortlessly.

Q. *Do you believe a good motion picture could be made with a simple motion-picture camera such as most amateurs have, without sound equipment?*

A. Yes! There are many examples of excellent silent motion pictures made on small-size film. And remember, some of the great motion-picture classics are silent films.

Recently I saw a fine two-reel picture called "Red." It was about the color red, and had no sound with it. The photographer who made it worked with a minimum of small motion-picture equipment. It was imaginative, well organized and thought out. I enjoyed it more than many full-length features.

It is the content of the film and not the mechanical things behind it that make a film good or bad. *The Little Fugitive* is an example of a film made without vans of equipment and a million dollars. The people that made it caught something real, something original in it.

Q. *What position do you think the amateur photographer holds in the field of motion pictures today?*

A. Not a very high one. However, they could be doing a great job. They could be helping rescue some of the fine elements of classic films, and contributing new ideas.

Look at the close-up. In the hands of Griffith the close-up was like a microscope. It examined emotions in people's faces, and gave us insight into their personalities. Today, in many commercial films, the close-up shows beautiful people only—he-men, pretty girls.

The amateur could be making journalistic films, Disney-type nature films, and films that contain pure, personal values. There is no limiting force on him, really, except his own imagination and resourcefulness.

Q. *What type of training is best for a cameraman?*

A. The technical training he must get from schools, assisting other cameramen, or books. But (*Continued on page 138*)

Timing device, the kind used for still cameras that can be purchased at most photographic supply stores, is attached to release button.

With camera running, Dana and Ginger Lamb walk through the

Put yourself

Explorer-photographers Dana and Ginger Lamb tell you the techniques they used to put themselves in the feature film, *Quest For The Lost City*

Leica extension tubes were fitted to motion picture camera by means of special adapter rings. Set-up was used to photograph close-ups. Insects were put inside glass housing containing sand. Grass served as backdrop.

DO YOUR HOME movies of the annual vacation or the family outing seem to be a little bit incomplete? Is there someone missing? Could it be *you?*

Everyone, the wife, the kids and even the family dog gets in the picture, but not you. You were operating the camera. Or, how many times have you handed your movie camera to some stranger and asked him to shoot a few feet of film of you and the family, only to find all the heads cut off when you got the film back from the processor? Frustrating, isn't it?

Dana and Ginger Lamb are a couple who have solved that problem. They have traveled all over South and Central America shooting motion pictures, and they both are in almost every scene they shoot.

The Lambs have been so successful that one of their films, *Quest For The Lost City*, shot in 16-mm color, is currently being released throughout the country by R.K.O. Pictures. It is the

area covered by the film. Camera was wound just a turn-and-a-half so that only a short amount of footage would be run off for the sequence.

in movies

Dana and Ginger Lamb

By HARVEY SHAMAN

feature-length story of their search for and exploration of the ruins of a lost city in the jungles of Central America.

Here is how the Lambs went about putting themselves in their own movie, and how they used other techniques that you can employ.

SHOOTING PROCEDURE: When both Dana and Ginger wanted to be in the picture at the same time, they would set up their camera on a tripod, and start it with a delayed-action timer. This gave them 10 or 12 seconds to get into position before the camera started operating.

The timer which the Lambs used is similar to the ones you can buy in any photographic store for less than five dollars. It is simply a spring-operated clock mechanism with a tripper arm at one end. In order to use it on their movie camera, the Lambs mounted the timer on their tripod and connected it to the camera starter (*Continued on page* 139)

All equipment used to photograph full length feature film, "Quest for the Lost City," is shown here: two Bell & Howell 16 mm cameras, two one-inch lenses, a normal and telephoto lens, two light meters, two tripods, close-up tubes, tape measure, and timing devices.

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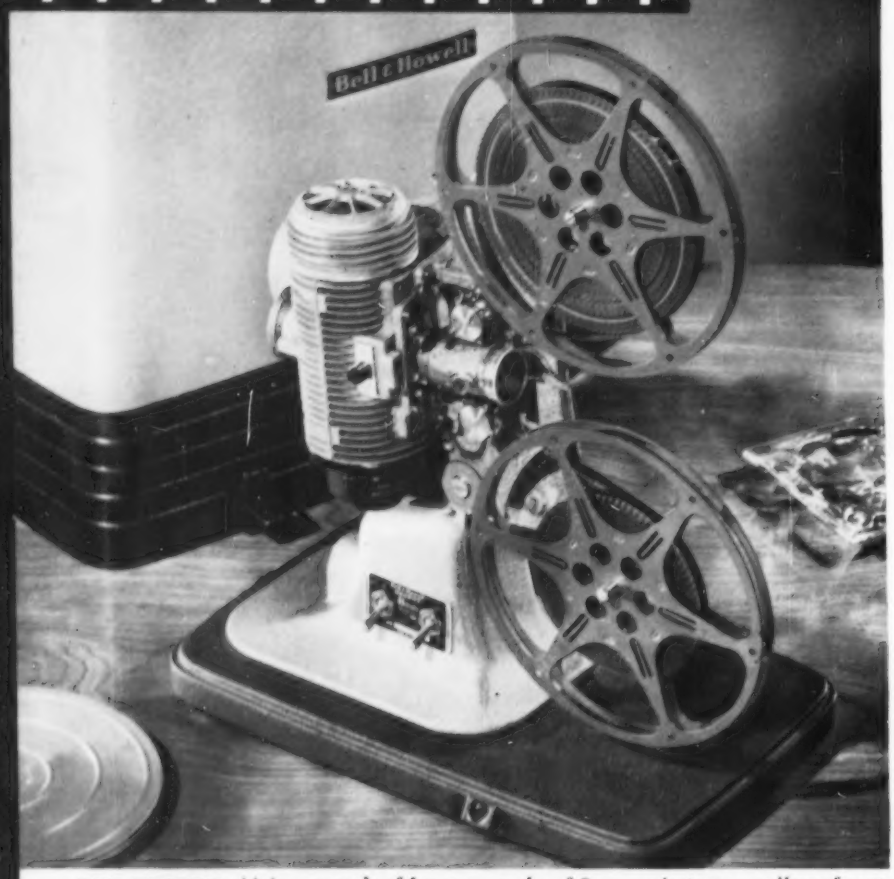

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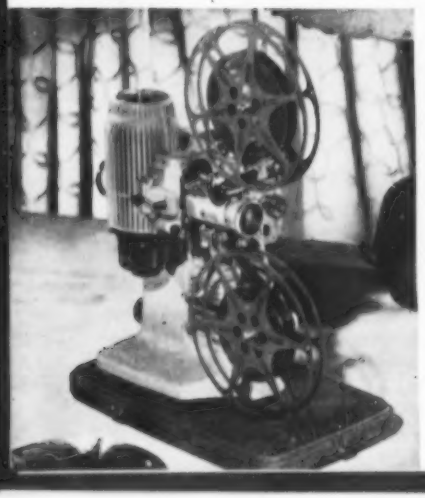

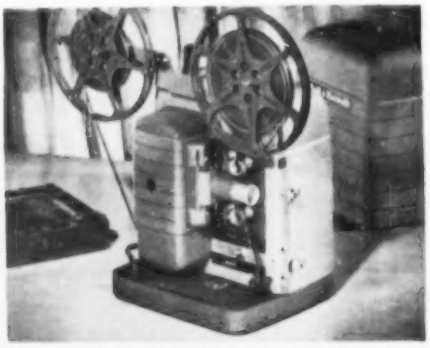

THE 263 MONTEREY offers the 8mm home movie maker sharpest 500-watt projection at an economy price. With die-cast case, only $99.95.

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Elia Kazan

(*Continued from page* 135)

beyond this point in creative photography, he must be careful.

I think it was Henri Cartier Bresson in his book, *The Decisive Moment*, who said that he learned how to become a photographer by going out and photographing. This is important. Cameramen should go out once they have their basic technical training and make pictures. If a cameraman should take courses or work under a "master" there is great danger of imitating the teacher or master.

The most important thing is to have the amateur get onto film the things that *he* sees and feels.

Q. *How do you go about making an actor, especially an amateur actor, forget about the motion-picture camera that is trained on him?*

A. Get him thinking about something else. If you get him doing something that is natural to him—get a baker baking—then you can get natural actions.

Another point which I think is very important, keep things on your set at a happy pitch. Make a game out of your whole procedure. A play atmosphere is very conducive to getting the most out of your actors.

Q. *What do you think an amateur could learn from your latest film* East of Eden?

A. I won't answer that question. I don't believe I can speak fairly about my own films.

(Editor's note: *East of Eden*, which will appear at theatres near you in a matter of weeks, is in CinemaScope and WarnerColor. It is a warm, sensitive film, with the finest compositions that have ever been done in this wide-screen process. The actors and the camera move freely and easily throughout the picture. The color and lighting are delicately handled. They are far from busy and circus-like. *East of Eden* is one of the fine films of the year. Amateurs might do well to see it twice—once for story and once for instruction and ideas.)

Q. *Most amateurs shoot color film. Do you feel they are overlooking the possibilities of black-and-white?*

A. I certainly do. Most color films I see have a common fault. The color is too pretty, not quite real. Often people are after candy colors. I would warn amateurs to stay away from this type of color.

Black-and-white films have wonderful possibilities. A trip to the theatre to see one of the classics like *Baker's Wife* by Pagnol will convince anyone of that. But after all, is it color, lighting, or smoothness that really counts in a good film? I would say it was the content of the film that was most important. If the amateur goes after and gets onto film the things he knows best, and has thought about—nature, a farm, his wife—he has a good film. It is the content of a film that counts.

Take *Jazz Dance*, for instance, that wonderful film that was shown in New York recently. It was done in black-and-white and had what many commercial motion-picture makers would say technical flaws, but it was one of the fine films I have seen. It was edited beautifully. It said a great deal and made you feel it. (See *Jazz Dance*, POPULAR PHOTOGRAPHY, Nov., 1954, page 54.)—

Put Yourself in Movies

(*Continued from page* 137)

button with a small wire hook.

To stop the camera at the end of a scene, they utilized a characteristic of the camera itself. "We have found that with the average amateur equipment, one-half of a turn of the winding crank will operate the camera for approximately one second. So, if we wanted a scene of 10 or 12 seconds, we would give the crank five or six turns."

SETTING UP THE SCENE: "To be successful, we have found that it pays to plan carefully ahead of time," said Dana. "When the camera is operated by the self-timer, it is not possible to be sure your action is correct, because there is no one looking through the viewfinder."

The Lambs would set up their camera on the tripod, and then while one was looking through the viewfinder, the other would use rocks and small branches to mark off to the right and left the area that the camera was covering. In that way they did not move out of the frame of the picture while the scene was being taken.

To focus, the one who was doing the marking would walk toward the camera until the image began to be fuzzy, and mark that spot. Then they would walk away from the camera carrying out the same procedure.

You can utilize this same technique in framing and focusing your own camera when you want to be in the scene. In the country or on the beach there are always twigs and rocks you can use for marking. In the city, you can use a piece of chalk to make small marks on the sidewalk and on the sides of buildings.

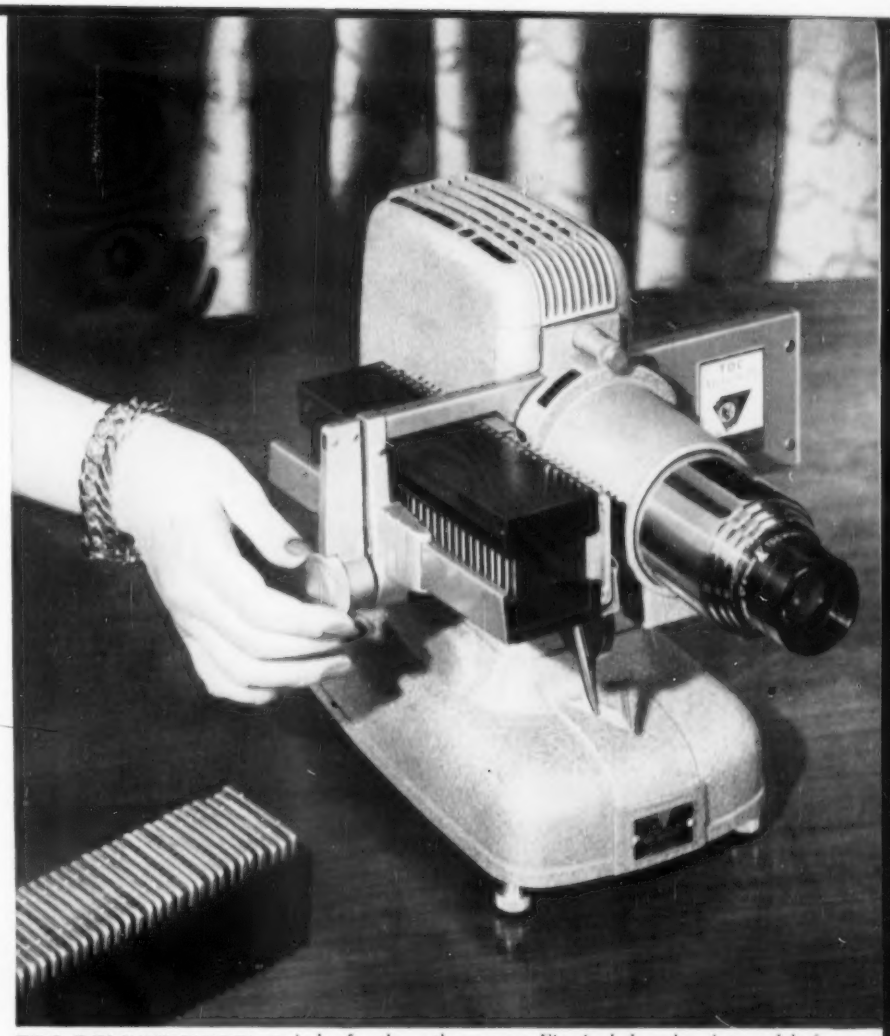
SHOOTING EXTREME CLOSE-UPS: Another shooting technique the Lambs used in *Quest For The Lost City* was in the making of close-ups of insect and plant life in the jungles by existing light.

Their equipment consisted of a set of Leica extension tubes, a through-the-lens viewer, and a small tape measure. To fit the extension tubes on the 16-mm movie camera, they had a set of special adapters made. These were simple disks, one side threaded for the extension tubes and the other side threaded for the camera and lens.

Because of the small amount of light which entered the lens when using the extension tubes, there was no practical way to judge the exposure (see POPULAR PHOTOGRAPHY, February, 1954, page 156) so they opened the lens to its widest aperture and shot in the brightest sunlight they could find. Occasionally they would use a small mirror to direct the sunlight where they wanted it.

The Lambs suggested using a small stage, about six inches across and surrounded by thin glass or clear plastic on which to photograph insects and small objects. The background can be set up either inside or outside the cage, and the shooting is done through a Polaroid filter to cut out any reflections.

SHOOTING PLAN: "We have a saying that 90 percent of the success of your picture is in the preliminary preparation," said Dana Lamb. "Too many amateurs



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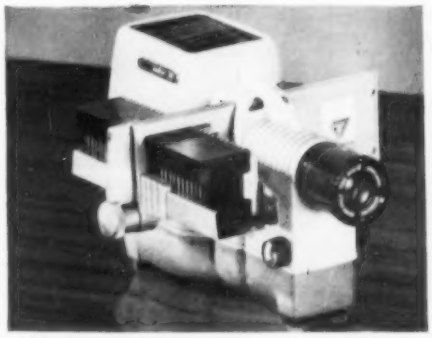

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just start shooting film without planning it out ahead of time."

The Lambs work out a shooting script and plan just how each sequence was to be handled and whether the action was *camera right* or *camera left*.

"We would underline the *camera right* or *camera left* because it is very important," said Ginger Lamb. "If you take a scene of a person walking from left to right, and in the next scene he is going from right to left, it indicates he has been somewhere and is coming back."

"Our general sequence of scenes is an establishing shot, a medium close-up, then a close-up," she continued. "The closer the better. Then, a pullback shot, that is, a medium-long shot for the conclusion of the sequence."

This is a good series to keep in mind for your own home movies: A long, a medium, a close-up, and then a pullback to a medium.

Here is how it might be used to set the stage for a family picnic. 1—A long establishing shot showing as much of the surrounding area as possible. 2—A medium shot showing the family coming in from the right of the camera and going to the center of the picture, where they begin setting down the picnic baskets and thermos jugs. (This is where you would use the technique of putting yourself in the picture.) 3—A close-up of the picnic baskets and thermos jugs being set down. 4—A medium-long shot showing the immediate picnic area that will be in the rest of the sequence. (Again the technique of putting yourself in the picture.)

CUTTING COSTS: They have found the best way to cut costs in home-movie making is to keep a very careful record of each scene. It is rather tedious at times, but it certainly pays off.

The Lambs keep a record of the light readings, focus, aperture, running time, camera angle, subject matter, and any other details which might be important should they have to come back later and reshoot all or part of a scene.

"These records are very valuable when we start editing the film," said Dana. "From them we can also figure out what mistakes we have made when a scene doesn't turn out right."

"Our experience," he said, "has been that the careful photographer really gets a bigger kick out of shooting pictures when he takes his hobby seriously, and also, the results are more gratifying."

VIEWER IDENTIFICATION: In the Lamb's film, *Quest For The Lost City*, a person sitting in the audience has a sense of identification with the picture. That is, he has the feeling that he is going through the various experiences right along with the Lambs. He is climbing hills and swimming in lakes and fighting his way through the jungle with them.

Here is how the Lambs went about shooting to make you feel you were going through their adventure with them.

"We have found that quite often it is not what you want to show, but what the audience wants to see that makes the difference between a good and a bad film," said Ginger. "For this reason, we tried to imagine that an audience was sitting there watching us whenever we filmed a sequence, and we tried to re-enact any experience we had that we thought might be of interest to that audience."

EQUIPMENT: In making their movie, the Lambs traveled in "unexplored areas where the going was really rugged." They traveled without native guides or porters, so everything they took with them had to be carried on their backs. For this reason, their "photographic equipment was pared down to the very minimum." *Its total weight was 18 pounds.*

The Lambs used only amateur equipment and all of it cost less than $600. It consisted of two Bell & Howell 16-mm cameras. One had a regular one-inch lens and the other a three-lens turret mounting a wide-angle, a one-inch normal and a four-inch telephoto lens. They had a separate timer for each camera, and two tripods. One was a Quick-Set and the other a telescoping model that was small enough to fit into the camera bag. In the bag also were two G-E light meters, a set of close-up extension tubes with adapters, a small tape measure for focusing, and a through-the-lens viewer for use with the extension tubes. They also carried a Leica and a Zeiss Ikon.

MATERIALS: The Lambs use regular 16-mm Kodachrome daylight-type film in magazine loads. The amount they carry with them depends on the type of country which they will be traveling in and the estimated footage required to get the scenes they need. On a recent trip they carried 40 pounds of film in addition to their regular camping gear.

HANDLING AND PROTECTING FILM: "The proper thing to do with exposed film is to get it to the processor as soon as possible," said Dana. "This applies not only to the tropics, but everywhere, because rapid deterioration takes place as soon as any film has been exposed to light."

If you can't send your film to a processor immediately, then you must protect it from heat and moisture, and—in the case of magazines—from the vibration which will tend to throw the magazines out of alignment.

The Lambs solved the vibration problem by careful packing and padding of the magazines. Heat and moisture required a more elaborate procedure. Because they had to travel very light, they could not carry a dehydrating agent (silica gel) so they made their emergency food rations do the work for them. When moisture was very bad, they would heat up one of these rations—dried corn, wheat, and rice—until residual moisture had been driven out, then they would bury the exposed film in it for about 10 minutes. The film was then put in its tinfoil envelope and sealed with Scotch tape. The sealed film was wrapped in a pliofilm bag. Another trick they used was to dry out their sleeping bag, either in the sun or by the campfire, and wrap the film in that.

Why don't you try putting yourself in a movie of your own? It, too, might wind up being shown to a nation-wide audience. Even if it doesn't, the fun and satisfaction you have in making and showing it to your family and friends will be well worth the effort.—

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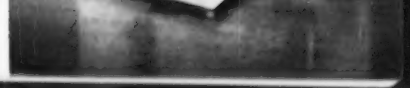

Calendar of exhibitions

*Conducted according to the recommended practices of the Photographic Society of America.

1955 Baltimore International Salon of Photography*, The Baltimore Camera Club, Baltimore, Md.
Closes April 13, 1955.
Entry fee $2, four prints and/or color prints allowed. Color slides $1, four allowed.
On exhibit from May 1 to 22, 1955.
For information and entry blanks, write Edward M. French, Jr., 4603 Mary Avenue, Baltimore 6, Md.

1st Oakland Stereo International Exhibit*, Oakland Camera Club, Oakland, Cal.
Closes April 15, 1955.
Entry fee $1, four stereo slides allowed.
On exhibit May 3 and 9 in Oakland and May 5 at Museum of Art in San Francisco.
For information and entry blanks, write Helen Brethauer, Chairman, 4057 Masterson St., Oakland 19, Cal.

10th Columbus Color and Nature Slide Exhibit*, The Columbus Color Camera Club, Columbus, Ohio.
Closes April 16, 1955.
Entry fee $1, four slides allowed.
On exhibit in Columbus on April 23 and 24, 1955.
For information and entry blanks, write Merle L. Rhoten, Chairman, 2223 Neil Avenue, Columbus 1, Ohio.

All Canadian Exhibit of Pictorial Photography, Manitoba Camera Club, Manitoba, Canada.
Closes April 30, 1955.
Entry fee $1, four prints allowed.
On exhibit at Winnipeg Art Gallery from May 20 to June 4, 1955.
For information and entry blanks, write J. M. W. Duncan, % Strains Ltd., 318 Smith St., Winnipeg, Manitoba, Canada.

17th Buffalo International Exhibition of Nature Photography*, Science Museum Photography Club, Buffalo, N. Y.
Closes May 2, 1955.
Entry fee $1, four prints and/or slides allowed.
On exhibit at Buffalo Museum of Science May 17 to June 12.
For information and entry blanks, write Robert T. Huyck, Chairman, 280 Warren Ave., Kenmore 23, N. Y.

Color Print Contest*, Color Division of the Photographic Society of America, Philadelphia 3, Pa.
Closing date May 20, 1955.
Entry fee $.50.
For information and entry blanks, write Contest Director, Joe E. Kennedy, 1029 Kennedy Bldg., Tulsa 2, Okla.

25th Midland Salon of Photography*, The Midland Counties Photographic Federation, Wednesbury, Staffordshire, England.
Closes May 28, 1955.
Entry fee $1, four prints and/or slides allowed.
On exhibit at Edwin Richards Art Gallery, from July 2 to 30.
For information and entry blanks, write Geo. Vernon Billson, Gordon Cottage, Clive Road, Bromsgrove, Worcestershire, England.

6th Annual Southwest International Exhibition of Photography*, Southern California Association of Camera Clubs, San Diego, Calif.
Closes June 1, 1955.
Entry fee $1, four prints and/or slides allowed.
On exhibit at Southern California Exposition and San Diego County Fair from June 24 to July 4, 1955.
For information and entry blanks, write R. J. Smith, P. O. Box 337, La Mesa, Calif.

1st Pondicherry International Salon of Photography, Ashram Photography, Pondicherry, India.
Closes July 10, 1955.
Entry fee $1, number on request.

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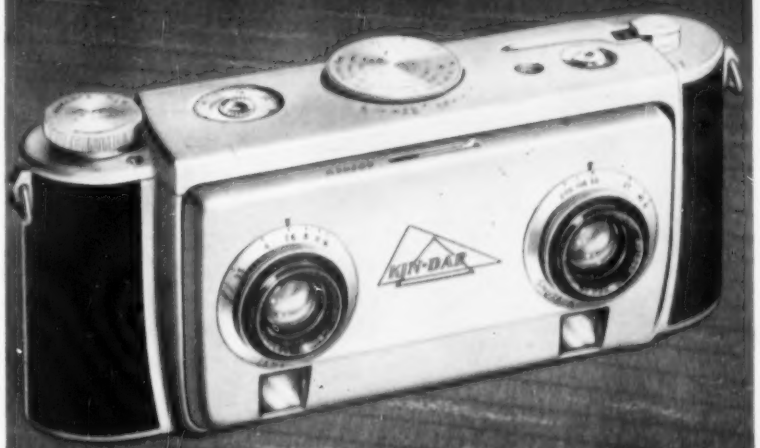

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1955 Evergreen Empire Color and Nature Slide Exhibition*, Bremerton Camera Club, Bremerton, Wash.
Closes August 15, 1955.
Entry fee $1, four slides allowed.
On exhibit at Kitsap County Fair, Bremerton from August 25 to 28; at YMCA, Aberdeen, on August 31; and Seattle, Sept. 9.
For information and entry blanks, write C. W. Biedel, Box 1236, Station A, Bremerton, Wash.

2nd Annual Central Washington Photographic Salon, Yakima Camera Club, Yakima, Wash.
Closes August 27, 1955.
Entry fee $1, four prints allowed.
On exhibit in Yakima from Sept. 21 to 25, 1955.
For information and entry blanks, write G. S. Maring, 218 N. 35th Ave., Yakima, Wash.

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Traveling Salons are made up of selected prize-winning prints from POPULAR PHOTOGRAPHY's International Picture Contests. Salons are supplied to clubs, stores, schools and other organizations open to the general public, for exhibit. For details, write to Salon Department, POPULAR PHOTOGRAPHY, 366 Madison Ave., New York 17, N. Y. At times when demand exceeds supply of Salons, you will be sent information, and your request will be placed on our waiting list to receive a Salon at the first possible opening.

April 2-16

ARKANSAS, Clarksville—(Frank's Campus Studio); Fifth Salon.
CALIFORNIA, Angwin—(Pacific Union College); Eighth Salon.
ILLINOIS, Altamont—(The Altamont Lions Club); Ninth Salon.
ILLINOIS, Pontiac—(Chief City Camera Club); Eighth Salon.
KANSAS, Humboldt—(Humboldt Public Library); Eighth Salon.
MASSACHUSETTS, Cambridge—(Massachusetts Institute of Technology); Ninth Salon.
MASSACHUSETTS, Dedham—(Dedham Public Library); Eighth Salon.
MINNESOTA, Bemidji—(State Teachers College); Fifth Salon.
MINNESOTA, Minneapolis—(Northern Photo Supply Co.); Tenth Salon.
NEW YORK, Elmira—(Elmira Heights Camera Club); Ninth Salon.
PENNSYLVANIA, Hazleton—(Hazleton Camera Club); Tenth Salon.
TENNESSEE, Kingsport—(Civic Auditorium); Ninth Salon.
WISCONSIN, Milwaukee—(Teeter's Camera Store); Ninth Salon.

May 1-15

ALABAMA, Tuscaloosa—(Veterans Administration Hospital); Ninth Salon.
CALIFORNIA, Petaluma—(Petaluma Camera Club); Eighth Salon.
CALIFORNIA, San Bruno—(Portola Camera Club); Tenth Salon.
ILLINOIS, Bloomington—(Bloomington-Normal Camera Club); Fifth Salon.
KANSAS, Abilene—(Jeffcoat Studios); Eighth Salon.
KANSAS, Hutchinson—(The Hutchinson News-Herald); Tenth Salon.
MINNESOTA, St. Paul—(Fisher Photo Supply Co.); Fifth Salon.
NEW YORK, Rochester—(Rochester Public Library); Tenth Salon.
RHODE ISLAND, Providence—(Brown University); Tenth Salon.
WASHINGTON, Seattle—(West Seattle High School); Ninth Salon.
WEST VIRGINIA, Wheeling—(Ohio Valley Camera Club); Eighth Salon.
WISCONSIN, Fort Atkinson—(Fort Atkinson Camera Club); Fifth Salon.

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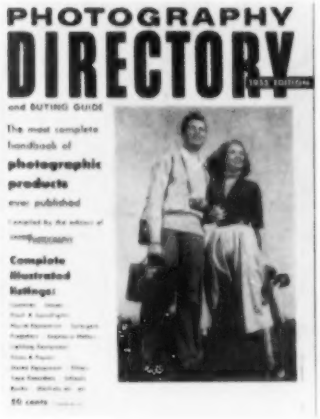

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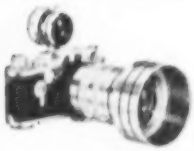

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contests and markets

CONTESTS

LIFE MAGAZINE, along with the **PHOTOGRAPHIC SOCIETY OF AMERICA**, has announced a $10,000 essay contest for amateur photographers. Prizes of $5,000, $2,500, and $1,000 will be awarded to winning entries which may be black-and-white prints or color transparencies and must be accompanied by captions and text in the style of *Life*. Photo essays will be judged as material regularly submitted to *Life*, and if winning entries are published, *Life* will pay usual page rates, as well as prize money. A booklet "How to Win the *Life* Contest" which has been made available by the PSA to those interested in the contest, is available from the PSA office, 30 East 60th Street, New York, N. Y. Entries themselves must be mailed before July 31, 1955, to Box 795, New York 46, N. Y.

THE 17TH ANNUAL NEWSPAPER NATIONAL SNAPSHOT AWARDS, which opens this year on May 29, will again be sponsored by more than 90 newspapers throughout the country. Approximately $17,500 in prizes will be distributed among weekly winners in the local contests and among the top prize winners in the national contest. Individual snapshots or prints up to 11x14 may be submitted each week of the contest to the sponsoring newspaper in your area in as many of the following classes you wish: A—Babies and Children; B—Activities, Teen-agers and or Adults; C—Scenes and "Still Life"; D—Animals and Pets. Every week until the end of the contest, September 10, a $5 award will be made in each of the four classes, and after the last week of the contest, regional winners will compete against each other to determine which single photo from each group will enter the National Contest. The newspapers will make $25 awards to the top winner in each class. Prints of uniform size will be sent to the National Awards, where the top prize winners will be chosen. The three top prizes in each group will be $1,000, $500, and $150, respectively, along with 68 additional awards of $50 each. For the name of the nearest participating newspaper in your area of the United States or Canada, write National Newspaper Snapshot Awards, 343 State Street, Rochester 4, New York.

THE NEW HAVEN RAILROAD photographic contest for the winter season will feature human-interest pictures of fun in the New England states as well as scenic shots of that area. Duplicate prizes will be awarded in the two classes of entry; black-and-white and color. In each class of entry the two top prizes will be $500 and $200 with two $50 awards for third and fourth prizes and 20 additional prizes of $10 each. Contest rules are available by writing the New Haven Photo Contest, Room 3634, Grand Central Terminal, New York 17, New York, or from any New Haven ticket office. Entries must be sent to the New York Central address by the contest deadline, April 15, 1955.

BOYS' LIFE magazine will open its 1955 photography contest May 1 to boys and girls who will not have passed their 19th birthday by September 15, 1955. Over $2,000 worth of photo-equipment prizes will be awarded among the seven following groups of entry: Color Slides; Camping and Hiking; Action in Sports; People; Animals; Landscapes and Buildings; Trick and Gag photos. Photographs will be judged within each class of entry but duplicate prints may be entered in any class under which it can qualify. No more than one prize may be won by a contestant in each category. Black-and-white photographs must be no larger than 8x10" and all entries must be accompanied by the following information: Name, address and age; type and make of camera, film, flashbulbs, and filter used; when and where picture was taken and title of picture. Model releases must be available on request for any recognizable people in the pictures. Photographs and transparencies will be returned only if covered by

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return envelope and postage. Submissions to the contest and requests for further information should be sent to Boys' Life Photo Contest, 2 Park Avenue, New York 18, N. Y.

NIKKOR CLUB of Japan has announced a contest open to users of Nikkor lenses only. Any number of previously unpublished, unmounted black-and-white prints no smaller than 10x12" and color transparencies are wanted. The three top prizes will be awarded the black-and-white entries, with smaller prizes going to winners in the color division as well as to runners-up in black-and-white. Only rejected color transparencies will be returned. Entrants outside Japan will receive merchandise awards (including a Nikon S-2 as First Prize), up to the value of prizes awarded in Japan. Each print must carry the following information: Name; age; address; picture title; maximum aperture of lens; lens number; camera used; lens stop, shutter speed and film used; filter, if any; lighting; printing paper. Entries which must be postmarked by April 30, should be sent to Nikkor Club, c/o Nippon Kogaku K.K., Oi, Shinagawa, Tokyo. Awards to be announced May 20.

OCEAN HIWAY ASSOCIATION is featuring a competition for pictures taken along the route of Ocean Highway, from New York to Jacksonville, Florida. Awards totaling $150 will be made monthly from November 1, to May 1, 1955, with three $50 grand prizes for the best pictures taken during the winter season. Complete details are available from Dept. PC3, Ocean Hiway Association, P. O. Box 1552, Wilmington, Delaware, and entries should be sent to Ocean Highway Photo Contest, P. O. Box 267, Charleston, South Carolina.

MARKETS

FRANKLIN PHOTO AGENCY, 62 Elm Hill Ave., Roxbury, Mass., is looking for 4 x 5 color transparencies of general interest for use in illustrations, advertising, and calendars. Transparencies are purchased either on a one-time or all-rights basis and may be recalled by the photographer at any time before the purchase is made. MURAL HOUSE, 58 West Adams, Detroit 26, Michigan, is purchasing at $5 and $15 per picture, calendar-type scenics suitable for murals. Send 8 x 10 black-and-white glossy prints for consideration. Negatives will be required for purchased photographs. Exclusive rights are not required and all unused pictures are returned.

CHARLES M. COWLING, 2405-5th Avenue, Sacramento 17, Calif., is buying cheesecake-type photographs for advertising purposes. Payment is $5 to $10 per print. Send small black-and-white prints and enclose return postage.

MURAL HOUSE, 58 West Adams, Detroit 26, Michigan, is purchasing at $5 and $15 per picture, calendar-type scenics suitable for murals. Send 8 x10 black-and-white glossy prints for consideration. Negatives will be required for purchased photographs. Exclusive rights are not required and all unused pictures are returned.

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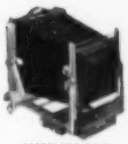

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Legal Problems in Photography

(Continued from page 42)

snapshots of women generally in the nude, in various poses termed by the court as "frankly provocative." The store in which they were sold specialized in the sale of magic and novelty articles but the windows featured art books containing nudes.

In another prosecution some of the pictures featured two or more models in various poses in the nude. They were sold in a bookstore specializing in the sale of cheap books.

In still another case the pictures were purchased at a bookstore which from its window display featured sexy books with titles such as *Free Lovers, Sinful Cities of the Western World, How To Make Love*, and others.

The last three mentioned cases were all tried at one time. The court in deciding against the sellers said that in determining whether the pictures are obscene within the meaning of the law one can start with the proposition that nudity per se is not obscenity. The court said:

> The reproduction of a Goya nude may titillate, fascinate and stimulate, yet such reproduction does not violate the statute. The prohibitions of * * * the law do not extend to bona fide artistic expression even where such expression takes the form of reproducing Rubens' famous painting of Satyrs chasing buxom and robust nudes. * * * Public sophistication has also advanced to the stage where a man displaying a September Morn calendar will not be clapped into jail, even though September Morn is a far inferior artistic production to a Goya or a Rubens.

The judge then went on to say that when one sees men "pawing" over such pictures in stores in the Times Square area, it is obvious that their appeal is frankly sexual and that the pictures in question therefore meet the test of obscenity.

Pictures in a book called *Let's Go Naked* exposed in the window of a store were condemned in another case. The fact that strips of paper covered the private parts of the individuals portrayed did not make the pictures any less obscene.

A person was convicted for selling a book containing a collection of 88 photographs being mostly of female figures in the nude. The book was displayed in a store window where artists' supplies and materials were sold but no attempt was made to confine the sale of the book to those interested in the graphic arts. The photograph exposed in the window was that of a woman reclining, in the nude, on what appeared to be a couch, with the lighting effects so arranged that her busts and private parts were brought into prominence. The court called it "a provocative picture."

The seller of a nudist magazine containing pictures of persons in nudist camps was convicted for selling obscene pictures by a New York court.

Commenting on the sale of strip tease and other types of pictures, one judge said:

> If they could not stir sexual impulses, there would be no reason for the strip tease, or the pictures which portray models holding out their breasts in provocative fashion, or the picture which makes such a prominent display of the female buttocks and the anal region.

Note that in all these cases the sellers of the pictures and not the photographers were prosecuted. However, there have been cases where photographers themselves have been prosecuted under the obscenity laws. One such notable case was where the photographer conducted a school of photography where models posed in the nude and anyone wishing to attend classes could do so for a fee. Among the "students" were police officers in civilian clothing who took pictures of the model and used these as a basis for prosecution. After being convicted in the lower courts, the Appellate Court reversed the conviction holding that there was insufficient evidence for conviction. Obviously, the photos taken by the police were not taken as part of the instruction course and could not form the basis of the conviction. The fact that photographers haven't been prosecuted as often as sellers and distributors doesn't mean they are immune from suit. However, it is certainly an indication that some pictures may be entirely proper at the time of taking and yet may fall into the wrong channels, making the ultimate sellers subject to prosecution.

One thing is clear. In deciding whether or not a picture is obscene not only the picture itself is considered but the channels through which it is sold, and the types of persons for whom it is intended are also important. Perhaps that is why the nude painting in the museum is art and the photo of the nude being "pawed" by men in a cheap bookstore specializing in sexy photos and literature is not!—

The Family of Man

(Continued from page 88)

initial impact wears off—the feeling of having stepped into the Grand Canyon or the Carlsbad Caverns or something equally monumental—several interesting facts become clear. In the first place, Steichen did not slant this show to interest only photographers or connoisseurs of photography but to appeal to the widest audience—the very family of man which provides its central theme.

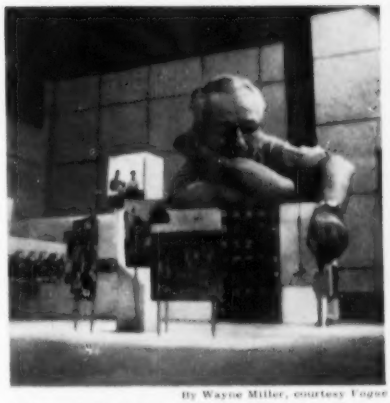
If ever a photographic exhibition could boast of having human interest, this one is it. From the opening display of lovers (see pages 80-81) to the closing group of children (see pages 82-83) the pictures encompass a tremendous range of human emotion and activity. Here is man's Odyssey from the womb to the grave, a camera panorama of primitive and civilized people around the world. And here are the basic experiences shared by all: birth, love, play, work, hunger, fear, loneliness, and death portrayed with the impact and sense of participation that only photography can give.

Already *The Family of Man* has established itself as a solid hit with the public. In the first two weeks more than 35,000 viewers flocked to see it, smashing all previous attendance records for any photographic exhibition ever held by the museum.

The size and scope of the show required equally monumental effort on the part of Steichen, director of the museum's department of photography, his assistant, Wayne Miller, and a special staff. They spent more than two years on what was probably the hugest single job of picture editing in history. Photographs poured in from all over the world in response to a widely-publicized request, and Steichen personally collected many more pictures during trips abroad until the astronomical total of more than two million prints was amassed. These were whittled down to about 10,000 from which the final 501 were selected. In its completed form *The Family of Man* represents the work of 273 photographers from 68 countries and includes some of the most celebrated names in photography as well as unknown amateurs whose work appears in public here for the first time.

Steichen and Miller drew heavily on the work of magazine photojournalists and documentary photographers, and were guided by story-telling content as much as by the artistic merit of each picture. Steichen explains that his basic aim was not to compile a collection of great photographs but to show "the essential oneness and goodness of man . . . in the simple direct terms of photography." The result is not photographic art for its own sake, but photography at work conveying information and inspiration.

Words are used sparingly—only small credit lines on each print, quotations from world literature to keynote the groups of pictures, and an introduction by Carl Sandburg. Whatever faults one may find with the show it proves, once again, how vividly the camera can communicate ideas and emotions without the help of words.



By Wayne Miller, courtesy Fogel

Edward Steichen, who conceived and produced *The Family of Man,* experiments with a scale model of the huge exhibition.

Architect Paul Rudolph, who designed the installation, has created a fit setting for this mammoth exhibition. He handles space, color, light, and layout with good taste and boldness. A few of the off-beat display techniques lapse into the melodramatic or overly clever, but most of them enhance the power of the pictures without calling undue attention to themselves. *The Family of Man* should stimulate other museums, galleries, camera clubs, and individuals into experimenting

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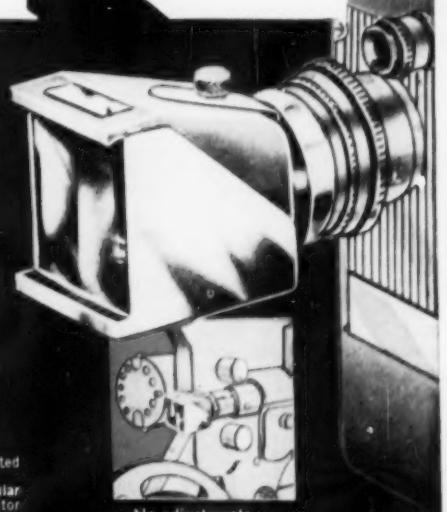

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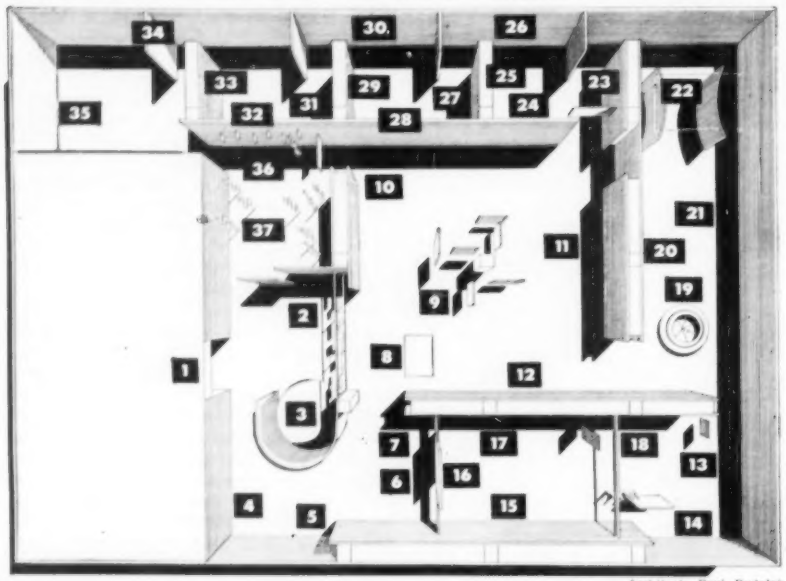

Architect: Paul Rudolph

Steichen's photographic tribute to humanity is so huge and covers such a wide scope that it requires new approaches to organization and display. The architect's drawing above shows how some of the problems were solved. Groups of related pictures are indicated by number in approximately the order they are seen by a visitor walking through the exhibition: **1** entrance arch, **2** lovers, **3** childbirth, **4** mothers and children, **5** children playing, **6** disturbed children, **7** fathers and sons, **8** photograph displayed on the floor, **9** "family of man" central theme pictures, **10** agriculture, **11** labor, **12** household and office work, **13** eating, **14** folk singing, **15** dancing, **16** music, **17** drinking, **18** playing, **19** ring-around-the-rosy stand, **20** learning, thinking, and teaching, **21** human relations, **22** death, **23** loneliness, **24** grief, pity, **25** dreamers, **26** religion, **27** hard times and famine, **28** man's inhumanity to man, **29** rebels, **30** youth, **31** justice, **32** public debate, **33** faces of war, **34** dead soldier, **35** illuminated transparency of H-bomb explosion, **36** UN, and **37** children.

with new ways of presenting photographs.

Many of these unusual display techniques—POPULAR PHOTOGRAPHY counted at least 13—can be seen in the interior views accompanying this article, and some are indicated on the architect's floor plan on this page. Here's a roundup of what you'll find at the exhibition in New York:

1. Enlarged sections of a crowd shot lining the jambs of the entrance arch.
2. Photographs mounted against a transparent wall through which a panoramic view of the exhibition can be seen.
3. A "rotunda" with walls of diaphanous curtain material against which photographs on the theme of childbirth are displayed.
4. Giant enlargements mounted on panels hanging from the ceiling.
5. Photographs mounted on upright screens.
6. A large photograph mounted low and parallel with the floor on a stand like a coffee table.
7. A many-sided "merry-go-round" stand displaying pictures of children from many lands playing ring-around-the-rosy.
8. A large photograph mounted high and parallel with the ceiling.
9. Photographs mounted on short curved "room dividers."
10. Cut-out silhouettes of African natives mounted upright on the floor.
11. Small photographs mounted against huge wall murals.
12. Photographs jutting out at right angles to the wall.
13. Photographs mounted on vertical posts.

The pictures vary in size from tiny album-size prints to enormous murals filling an entire wall, and are cropped and grouped in dynamic layouts. Unlike most photo exhibitions, which are designed to be viewed flat against a wall, *The Family of Man* makes dramatic use of space for viewing "in the round." No matter where you stand in any of the main rooms you see an interplay of overlapping, three-dimensional forms.

Most of the photographs are in black-and-white, although a few are toned for special effect. The most important color shot is a huge transparency of a hydrogen-bomb explosion which is illuminated from behind in a darkened room just before the exit.

Inevitably, an exhibition as ambitious as this will provoke controversy. For example, some people object that *The Family of Man* is not art at all, but a social and anthropological document, and suggest half seriously that it ought to be moved from its present location to the Museum of Natural History. Others have questioned its theme—an optimistic assumption of the "essential oneness and

goodness of man." The way some pictures are linked together because of physical similarities in the subject has been criticized as superficial, and the question has been raised whether the exhibition really provides deep insight into the nature of man or whether it is primarily a vehicle for Steichen's personal opinion.

Regardless of the validity of this criticism, *The Family of Man* is an important event in photography, perhaps the most significant of recent years. It deserves to be visited and revisited, to be thought about and talked about, to be subjected to searching questions. We'd like to hear your opinions, favorable or unfavorable, and will do our best to print as many comments by our readers as we can. For one reader's point of view, see *The Family of Man—A Minority Report* in the letters column of this issue.

If you miss the New York showing you still may be able to see *The Family of Man*. Plans are being made to open the exhibition at the Cleveland Museum of Fine Art, the Minneapolis Institute of Art, and perhaps in other museums across the country. Two "overseas editions" also are scheduled, one to travel in Asia, the other in Europe. It is Steichen's hope that *The Family of Man*, with its message of brotherhood spoken in the universal language of photography, may in some measure help ease the tensions afflicting mankind today.—*Arthur A. Goldsmith, Jr.*

OUR CONTEST WINNERS HONORED

Six prize-winning pictures from POPULAR PHOTOGRAPHY International Picture Contests were selected for *The Family of Man*, including this shot of a Peruvian flute-player by Eugene V. Harris, which is repeated as a theme picture several times throughout the show and in accompanying publicity and literature. Other winners include *Hot Jazz* by Hugh Bell (1954); *City Child* by Farrell Grehan, *Ballet Master* by Yoichi R. Okamato, *Hamburgers* by Robert Frank (1953), and *Brothers* by Ruth Orkin (1952).

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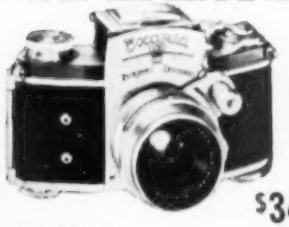

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Ektachrome vs Kodachrome

(Continued from page 109)

sample was found to have appreciably more grain than the Kodachrome.

Both of these transparencies were then projected side by side (using two projectors of the same make, model, and lamp wattage) on two 50x50-inch beaded screens. The projected images filled the respective screen areas. When these two images were observed from a normal viewing distance, the granularity appeared negligible in both.

When producing color prints from these transparencies, graininess is not evident in either sample result on low magnification. However, in those cases where the magnification is as high as ten times, the Ektachrome appears to exhibit more grain.

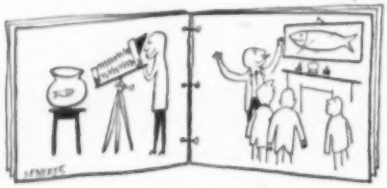
gradation

The new 35-mm Ektachrome is softer than Kodachrome. Because of its softness characteristic, it has more exposure latitude. It is estimated that this new film will yield an acceptable transparency if exposed plus-or-minus a full stop from the correct exposure, as compared to a limit of about one-half stop for Kodachrome.

color reproduction

After comparing many pairs of Kodachrome and Ektachrome test transparencies of various colored charts and objects, I found no great difference between the two films' color reproduction characteristics. In the new Ektachrome, the reds appear to be more bluish, producing more of a brick red than the Kodachrome. The over-all color balance and gray-scale reproduction appear fairly neutral in the new E-2 Ektachrome. Of course, this observation which is valid for the particular emulsions I tested may be subject to drastic revision if and whenever Kodak changes the emulsion characteristics or permits a slight shift in the response.

In sum, the new Ektachrome E-2 color film is substantially faster than corresponding Kodachrome films for daylight, electronic flash, and clear flashbulb exposures; it's on a par with Kodachrome "A" for photoflood exposure. On the debit side, Ektachrome E-2 is somewhat grainier than Kodachrome, and its resolution is measurably inferior to Kodachrome's. Nevertheless, Ektachrome E-2 offers such additional blessings as softer gradation, greater exposure latitude, and the unmentioned and immeasurable advantages of "consumer processing." These include immediate processing under the user's control (or those of his favorite processing laboratory) and especially the ability to "push" the effective film speed and alter the color response by processing manipulations.—



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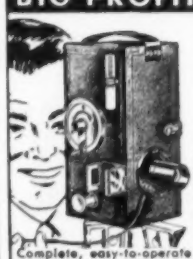

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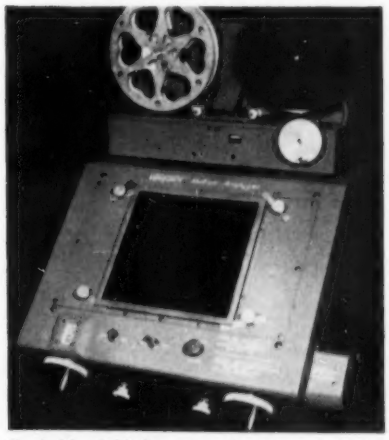
Tools and Techniques

(*Continued from page 16*)

Desk-Type Motion Analyzer. A handy new tool for simplified quantitative analysis of cinematographic motion studies has recently been perfected by the Vanguard Instrument Co., Valley Stream, L. I., New York, and is being sold by the Photographic Analysis Co. of Clifton, N. J. as the Vanguard Motion Analyzer. The basic function of the unit is to measure the linear motion vs the time interval of events recorded on motion-picture film for evaluation in terms of velocities, accelerations, deflections and stresses. Originally designed to process high-speed motion-picture studies produced in the Fastax and Eastman Kodak High-Speed cameras, it can also be used for oscilloscopic recordings on film as well as photographic instrumentation recorded with other cameras. The instrument is 22 inches high x 16 inches wide x 17 inches deep, and weighs about 35 pounds. It is used on a desk top or workbench in a normally lighted room, and requires no special training for efficient operation. It accommodates 400 foot or shorter lengths of 16-mm film and presents a 10x magnification (including the film edges so timing marks can be observed).



Portable tabletop cine viewer presents 16-mm film records under 10x enlargement.

Odds & Ends. The latest entries in the Japanese high-speed lens "derby" are products of the Fuji Photo Film Co., Ltd., of Tokyo, whose most notable contributions to the current photographic boom in that country have been a color film and a promising line of black-and-white taking materials. Their new lenses, both designed for 35-mm still cameras, are (1) an $f/2$, 35-mm wide angle lens and (2) an $f/1.2$, 50-mm lens constructed with eight optical elements—six made of new rare-element glasses produced by Fuji. So far, we've seen no objective reports on their quality nor heard of any export plans for the U. S. market.

. . . The aging of commercial developers was found to have been inhibited by the addition of ascorbic acid as well as zinc chloride in a study of photographic developer stabilization by A. Basinski and M. Tyrakowski reported in *Chemical Abstracts* 1954, 48, 7464 (from Analecta, *British Journal of Photography*—October 1, 1954). Acceleration of ageing, on the other hand, resulted from the addition of tannins and from the elevation of developer temperatures. Little effect on the oxidation-reduction potential was found when pyrocatechol, orthophenylenediamine quinine sulfate, coramine, coumarin, and sodium salicylate were added.

. . . Du Pont's "DH" dehydrated projection-speed emulsion which had formerly been marketed as an industrial product is now available through photographic supply stores as well as in ¼-pound and 1-pound sizes, at $7 and $24 respectively. The material, which is restored to liquid form by addition of water can be used to sensitize almost any surface, regardless of size or shape. One-quarter pound of "DH" should cover about 100 square feet and the 1-pound, about 400 square feet.

. . . Quite a considerable amount of useful information about magnetic recording, erase, and playback heads (leavened with a gentle sales pitch) is contained in a 24-page booklet currently available from Stancil-Hoffman, 921 No. Highland Avenue, Hollywood 38, Calif. for 10 cents in postage. Its title: *Magnetic Heads & Magnetic Recording.*—

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what's new — Trade Notes and News

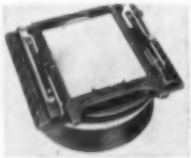
All data and descriptions ascribed to products listed herein are those claimed by the manufacturers and distributors, and listings are not to be construed as endorsements by POPULAR PHOTOGRAPHY. For further information write to address given in trade note.

CAMERAS & ACCESSORIES

VITO B is another Voigtlander camera offered by Willoughbys and their dealers. Said to be the only precision-made, popular-priced camera with automatic film transport, Vito B is equipped with Color-Skopar *f*/3.5 lens, and is synchronized for flash. Minimum focusing distance is 33 inches and the camera takes 36 color or black-and-white pictures on 35-mm film. A side lever coincidently transports film, counts exposure, sets shutter, locks double-exposure-prevention, and readies the camera for the next picture. Price is $54.50.

GAMI Automatic Sub-miniature 16-mm camera is distributed by Buttafarri Corp., 207 Fourth Ave., New York 3. It takes rapid sequences of three exposures without rewinding, its spring motor cocking the shutter as the film is transported. A viewfinder-rangefinder and exposure calculator employ a single eyepiece and adjustments are made while observing the image coincidently with the lowest visible figure on an extinction-meter scale, with a second movable scale above it. Price is $340 and 30-exposure cartridges of black-and-white film cost $1.10, with color priced at $2.80.

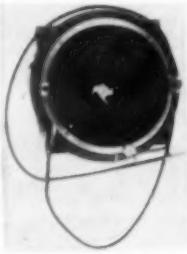
VOIGTLANDER VITESSA "L", 35-mm Automatic camera with built-in exposure meter, light-value Synchro-Compur shutter, and automatic picture mechanism is announced by Willoughbys, 110 W. 32nd St., New York 1. Shutter-speed changes are made automatically after setting the value indicated by the exposure meter; i.e., aperture and shutter speed are interlocked and changing either automatically adjusts the other to the proper setting. Price is $159.50 and full information is available from Willoughbys.



GRAFLOK CAMERA BACK is a product of Charles Beseler Co., 60 Badger Ave., Newark 8, N. J. It provides a replacement for the lamphouse of Beseler's Model 45M Enlarger which converts it into a 4x5 camera for horizontal or vertical use. Precise focusing is accomplished through 45M's Microjust controls. Filters are slipped into a filter drawer which is behind the lens. Price of the Graflok back is $42.75.

FOTO-ROLL-70, Korona Camera Works Division of Gundlach Mfg. Co., Fairport, N. Y., is available in an improved model. The unit is mounted on a camera in place of its normal groundglass, and provides a sliding back complete with groundglass and a carriage with roll-film mechanism accommodating a roll of 350-exposure 70-mm film. It is fitted by Korona to individual models of 5x7 and 8x10 cameras. Prices start at $125.

CONTAX IIa and **IIIa** stereo attachments and accessories are now available. Carl Zeiss, Inc., 485 Fifth Ave., announces a self-contained optical system replacing the Contax lens and consisting of two stereoscopically matched and coated 35-mm *f*/3.5 lenses of the Stereotar. When taking stereo pictures beyond 8 ft a prism attachment is fitted to its front. Price is $159. Also available are Special Stereotar Proxar lenses for subject distances of 8, 12, and 20 in. They can be used in connection with the new Contameter close-up device and cost $16.50 for the set. A viewfinder is priced at $10.



EGONE IRIS Lens Board Adapter is imported and distributed by Egon Egone, 91 Winthrop Rd., Brookline 46, Mass. It is installed on the camera front and eliminates the necessity of using lens boards with openings of various sizes. It may be obtained in seven sizes with maximum openings from 55-mm to 120-mm. Prices range from $25 to $70.

REVERE "38" 16-mm Magazine Turret Camera combines fast loading with versatility of a 3-lens turret and corresponding objective viewfinders. The divergent turret head permits use of extreme-wide-angle lenses in combination with 6-in. telephoto lens without optical or mechanical interference. Normal lens is fixed-focus *f*/2.5, with which the camera is priced at $169.50. With *f*/1.9 it is $194.50 and the cost with an *f*/1.5 lens is $252.50. Revere's address is 320 E. 21st St., Chicago 16.

BUSCH STEREO MAGAZINE is a 100-ft magazine attachment which fits most current models of stereo cameras, according to the maker, Busch Stereo Service, Inc., 850 W. Adams St., Chicago 7. It has an automatic counter that registers with each click of the shutter. Prices range from $275 (for Stereo-Realist and Revere cameras) upward.

LENSES & ACCESSORIES

TELEPHOTO LENS FOR ROBOT ROYAL is a new 200-mm *f*/5.5 Schneider Tele-Xenar with click stops, announced by Intercontinental Marketing Corp., 251 Fourth Ave., New York 10. Minimum aperture is *f*/32 and minimum focusing distance 8½ ft. A special mount permits use with the Robot Royal III breech-lock mount or the Model II screw-in mount. The new lens couples automatically with the built-in rangefinder of the Robot Royal III. Its over-all length is 5⅛ in. and all surfaces are coated. Price is $199.50.

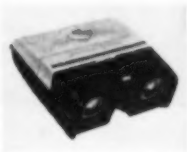
TOWER UNIVERSAL VIEWFINDER is a product of Sears, Roebuck and Co., and is adjustable for various lenses by means of a knurled ring; fits camera shoes for quick mounting and removal; has parallax adjustment from three ft to infinity, and includes a leather carrying case. The new device is suitable for use with 35-mm wide-angle, 85-, 90-, and 135-mm telephoto lenses. Price is $19.95.

KINOTAR 6-MM F/1.9 wide-angle lens for 8-mm has been added to the line of the Photographic Imp. and Distrib. Corp., 67 Forest Road, Valley Stream, N. Y. It has six elements, click stops, a filter holder for 21.5-mm filters, and a focusing mount setting to a maximum of six inches. Focusing is by rotation of the back part of the lens barrel. Price is $49.95.

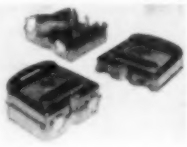
WOLLENSAK OPTICAL CO., 320 E. 21st St., Chicago 16, Ill., announces a coated 1½-in. *f*/2.8 Cine Raptar telephoto lens. An exclusive orienting brake eliminates the need for loosening screws when rotating the lens for proper indexing on the camera. It also has click stops, a depth-of-field scale, and a drop-in haze filter. Price is $46.75.

PROJECTION & VIEWING EQUIPMENT

ARCADIA STEREO is an illuminated, hand-held viewer claimed to give constant-focus, distortion-free stereo viewing. Lenses are matched and battery-retaining screws are eliminated with a spring-clamp device, facilitating battery changing. Made by the Arcadia Mfg. Co., 3214 W. Lawrence Ave., Chicago 25, Ill., it comes in two-tone plastic and the price is $5.95.



TWIN VIEWER for 2x2 color slides is imported by Spiratone, Inc., 135-06 Northern Blvd., Flushing 54, N. Y. An ingeniously arranged mirror system is said to create a three-dimensional effect when two-dimensional slides are viewed with both eyes. Price of the new viewer is $4.95.



B & L SLIDE VIEWER is for 2x2 slides and permits instant and easy insertion of transparencies by right- or left-handed users. They are sufficiently enlarged for simultaneous viewing by two persons. The illuminating system is color-corrected for accurate rendition and the lens is coupled with an unbreakable reflector to provide uniform light distribution. The image is said to be crisp and of exceptional brilliancy. Price of the device, which will be available after April 1, is $13.50.

VIEW-MASTER TRANSFORMER for use with the Sawyer self-focusing stereoscope plugs into any 110-v outlet, replacing the battery as a source of power. A product of Sawyer's, Inc., Box 490, Portland, Ore., price is $3.50 at camera stores.

V-45 is a 500-watt fan-cooled single-frame stripfilm projector announced by Viewlex, Inc., 35-01 Queens Blvd., Long Island City, N. Y. It has a 5-in. *f*/3.5 Luxtar lens and a cooling system said to be highly effective. V-45 is made entirely of die cast-

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ings and two switches permit interlocking and protective use of lamp and motor. A "jiffy" push-in operation threads the film-strip and positive framing is assured by "ceramic-edged" aperture plates. Price is $74.50.

CINECCESSORY KIT for 8-mm home movie-makers is announced by Elgeet Optical Co., Inc., 838 Smith St., Rochester 6, N. Y. Kit contains a 6.5-mm *f*/2.5 wide-angle lens covering twice the area of the normal lens, a 35-mm *f*/2.5 focusing telephoto lens, and a projection lens and adapter. Price is $86.90.

FLASH

HEILAND FOTO-EYE operates auxiliary flash units at distances up to 50 feet 30 degrees off the axis of the master unit, and when Strobonar V is the master, it operates beyond 100 feet. Fotoeye is enclosed in a tube similar to Heiland 25-2 Synchronette Size "D" battery case. It accepts Strobonar lamp heads on top and has a tripod socket at the bottom. Price of the unit, designated as Model HR-53 Fotoeye, is $24.50. Full information is available from Heiland at 130 E. Fifth Ave., Denver 3, Colorado.

HARWOOD HG Mercury Powered Flashgun is the first device to use the new Mallory PX-2 photoflash battery; is made by Harwood Electronics Co., 466 W. Superior St., Chicago. The gun has a special, miniature, wide-angle reflector which increases the guide numbers of small flash lamps from 15 to 20 percent and covers a 60-degree field. Features are: ejector; interchangeable ASA and European camera connections; locking shoe for accessory brackets; camera-mounting bar; tripod bushing, and adapter for M-2 lamps with test lamp. Price is $5.95 less battery.

STROBONAR SIX, a Heiland product, was designed for press photographers, and has a High-Low switch on the lamp head. Respective color guide numbers thus obtainable are 50 and 25, providing a full two-*f*-stop difference. The device incorporates two heavy-duty Eveready #492 batteries, a power source, providing 1,500 flashes before a drop of ½ *f*-stop. Added light output and better distribution are claimed for the new lamp head. Price is $128.60 and batteries are $7.95 each. Heiland's address is 130 E. Fifth Ave., Denver 3, Colorado.

KALART BC-400 FLASH UNIT is a new product of Kalart company of Plainville, Conn. It has a Lucite safety shield whose opening ejects the used bulb. The shield also doubles as an automatic circuit breaker which prevents premature firing while inserting bulbs. BC-400 is for Stereo Realist, Argus C-4, TDC Colorist, Revere Stereo, Graflex 22, and other cameras with electric shoes.

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BC-400 is made in three styles, priced as follows: Reflex, $24.95; Universal, $14.95; and with Electric Shoe Mount, $13.75, less battery.

NORWOOD MODEL X FLASH-MATE, a new exposure meter for speedlight use, is announced by Norwood Flashcraft Co., 2405 E. Washington St., Pasadena 7, Calif. Model X reveals the proper *f*-stop after coordinating film-sensitivity, speedlight-power, and distance-from-speedlight-to-subject factors. A chrome foot on the Model X enables its attachment to most cameras. Flash-Mate is of gray styron with chrome trim and has a lucite dial with calibrations in red and black. Its price is $14.95.

B-C FLASH for Voigtlander and other cameras features a bulb ejector, built-in tester, polished reflector, lock-nut fastener, two-way safety shield, and a connecting cord for Compur, Pronto, and Prontor shutters. Price is $9.95, from Willoughby's, 113 W. 32nd St., New York 1, N. Y.

PASSIVE TRIPPER with zero-delay feature is an importation of Interstate Photo Supply Corp., 28 W. 22nd St., New York 26, N. Y., for cameras lacking built-in synchronization. Model D costs $3.85 and Deluxe Model $4.85.

FLASH TERMINAL CONVERTERS enable flashgun owners to use this equipment on a variety of other synchronized shutter terminals. Price is $1 each. Information available from Spiratone, 49 W. 27th St., New York 1, N. Y.

SOUND PROJECTION EQUIPMENT

SECRET RECORDER is a product of Amplifier Corp. of America, 398 Broadway, New York 13. It is camouflaged in a leather briefcase which may be opened, carried, or laid down without showing the device in operation. Weight is 11¾ lb and dimensions are 16x12½x4½. Only volume control need be preset and it thereafter automatically equalizes the intensity of nearby and more distant sounds. Starting and stopping is effected by pressing a combination slidelock and switch. Price, complete, is $225. Write the manufacturer for full description.

FME TAPE RECORDER MODEL 37C is announced by Federal Mfg. and Eng. Corp., 199 Steuben St., Brooklyn 5, N. Y. Improvements over the earlier model include: two-belt system; circuit modifications improving tone fidelity; two-tone gray color scheme; redesigned control knobs. Like the 37B, the new model has two speeds and dual track. Price is $139.95.

IRISH LP No. 600 magnetic tape is claimed to have at least a 40 percent reduction in head wear. Available in 1-mil acetate or Mylar base, 7-in reel records up to six hours at 1⅞ ips at double track. Additional information from Nat Welch, OffRadio Industries, Inc., Opelika, Kansas.

CONCERTONE 20/20 High Fidelity Tape Recorder for home and semi-pro use is announced by Berlant-Concertone, 4917 W. Jefferson Blvd., Los Angeles 16. It accommodates 10½-in. reels without extension arms, head mount takes five heads; it has heavy-duty motors; a frequency response of 20 to 20,000 cycles usable signal; two-channel line and microphone mixer; a fast forward and rewind speed of 2,400 ft in less than a minute; flutter and wow less

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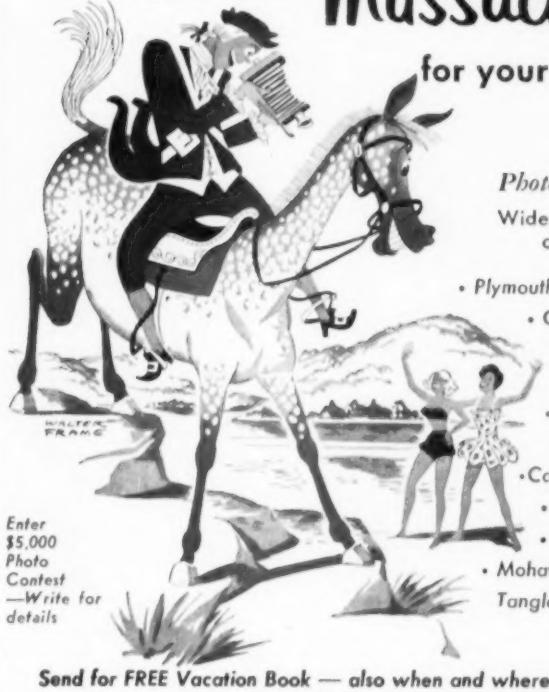

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than .1 percent RMS at 15 ft per second, plus other features. It's priced at $445 for the standard model and a combination binaural-monaural type costs $695.

TRI-FY DIXIE-LAND magnetic tape recorder, a new dual-track, two-speed product of Tape Recorders Inc., 1501 W. Congress St., Chicago 7, has a frequency response to 7,500 cycles, flutter and wow rate less than .5 percent, a plug-in recording head, pre-equalized amplifier, and a tape-guide slotting device. All vital parts are die-cast constructed for close tolerances and high durability. Price of the recorder is $109.95.

DARKROOM EQUIPMENT

FOCUSING MAGNIFIER said to cut enlarging time is announced by Bausch & Lomb Optical Co., Rochester, N. Y. Employing the reflector-and-grid principle perfected in the field of photomicrography, the magnifier is said to permit accurate focusing within three seconds. The projected image is reflected directly into the viewer's eye by a mirror and the exact focusing plane is established by a grid which causes the viewer's eye to focus itself on the image at the exact point where it also is in focus on the enlarging easel. Price is $6.50.

SOLARSTOWAY 35 is a portable 35-mm enlarger claimed to take only a minute to put together. Among its features are a 2 in. *f*/3.5, four-element Tessar-type lens; two 2.5-in. double-finish optical condensers; rigid, non-actinic 16x19-in baseboard; two-sectioned, 24-in. reinforced column; three-way bulb; a dustless, slide-through negative carrier; and a weight of 29 lb complete. More information available from Burke & James, Inc., 321 S. Wabash Ave., Chicago 4, Ill. Carrying a two-year guarantee, the price is $79.50.

MIDGET AQUA-LAB is a water demineralizer claimed by Automatic Steam Products, 140 W. 31st St., New York 1, N. Y., to produce gallons of mineral-free water from ordinary tap water. An ion-exchange resin inside the container does the job, and can be used repeatedly until a color change indicates the need of a replacement. The price is $1.69, replacements are 85 cents each.

RINS is a non-flammable, liquid destaticizer. When added to the final rinse water, it is claimed to make negatives dust free. A four-oz-concentrate bottle making three gallons of solution (used 1:100) is priced at $1. If not at dealers', write Merix Chemical Co., 1021 E. 55th St., Chicago 15, Ill.

NEW DEVELOPERS are announced by Edwal Products, 420 W. 11th St., Chicago 28, Ill. Edwal Fine Grain Developer is designed for all American roll films, certain sheet films, and 35-mm German film. Solution ratio of 1:15 develops three rolls of film in 15 min at 70 F. New formula Vel-

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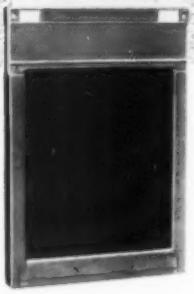

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2¾x3¾	.40	4 x5	.75	8x10	2.00

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35mm (20 Exp.) 1.00 (36 Exp.) 1.50
Ektachrome 35mm (20 Exp.) 1.25

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QUALITY CAMERAS SINCE 1910
Bass Camera Co
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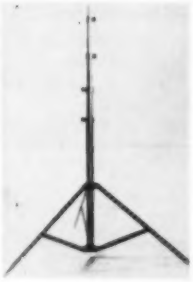
vet Concentrate for paper development is used 1:15 for fast papers and 1:19 for slow papers. This metol-less product can also be used for film development. Prices for a four-oz bottle are, respectively, 49 cents and 44 cents. A 16-oz size is also available.

RUBBER SYPHON and hand pump is self-starting. Squeezing the bulb pumps or syphons photographic solutions from container to tray, vice versa, or into a drain. General Scientific Equip. Co., 2700 W. Huntingdon Ave., Philadelphia 32, Pa., says it will not spill or splash. It is five feet long and the price is $3.

LABELON is the name of a plastic write-on tape which resists dirt, oil, water, and acids, making it ideal for solution-container labels. When written upon with a pencil, stylus, or ball-point pen, the writing appears beneath the surface. A folder of 18 strips is 19 cents and it is available in many strip and roll sizes, and colors. Manufacturer is Labelon Tape Co., 450 Atlantic Ave., Rochester 9, N. Y.

MISCELLANEOUS

PIC FEATHER-LITE PHOTO STANDS will be distributed by Graflex, Inc., Rochester, N. Y. Made in three sizes, seven, nine, and eleven ft when extended, the stands weigh, respectively, 1 lb 12 oz, 2 lb 2 oz, and 2 lb 8 oz, and are made of anodized duraluminum. A cable-anchoring ring holds wires snugly against the base, preventing tipovers. Prices range from $17.95 to $21.95.



TWO KODAK BOOKLETS are announced by the Eastman Kodak Co., Rochester 4, N. Y. **How to Take Better Kodachrome Pictures** contains color illustrations, diagrams, and exposure tables. It is designed for the average snapshooter and covers use of this film in daylight, under artificial light, and with synchronized flash. **Developing, Printing, Enlarging with Kodak Materials,** in a revised edition, covers the basic methods of all darkroom techniques. Both are 35 cents each from Kodak dealers.

CLOSE-UP KITS are announced by Eastman Kodak Co., Rochester, N. Y. **The Kodak** Pony Close-Up Kit features a framing attachment, supplementary lenses and filters, and a specially designed flashguard for this work. The attachment holds the camera and a Flasholder. An extended L-shaped frame outlines a 3x4 in. field of coverage at a distance of 6 in. and is designed to eliminate shadows when used outdoors. Dots and notches indicate fields of coverage when used with the Pony 135, Model B, and 828 cameras. The Technical Close-Up Outfit consists of the above, with the addition of a Kodak Pony 828 camera, Flasholder and attachments. Prices are, respectively, $19.95 and $62.75.

BODY-BRACE CAMERA POD is marketed by S.O.S. Cinema Supply Corp., 602 W. 52nd St., New York City. Made of lightweight cast aluminum, the device combines shoulder and body brace to provide extra steadiness and added comfort. It permits handheld shots with both movie and still cameras, weighs 3½ lb, and is priced at $24.95.

SUPERPOD PANHEAD No. 2600P is designed to fit all standard tripods. It features a horizontal gear for movie panning; an extra 90-degree tilt to change from horizontal to vertical position without moving

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Voigt Vito II f3.5 NEW	45.50
Kodak Stereo f3.5	57.00
Stereo Realist f3.5	73.50

MOVIE EQUIPMENT

Kodak Brownie f2.7	$ 22.00
Bolex H8 Leader f1.9 Turret	148.00
Revere 88 f2.5	32.00
Revere 80 f2.5	46.00
Revere 44 f1.9 Mag. Turret	93.50
Pathe Super 16 f1.9 Turret	225.00
Bolex H16 Leader f1.9 Turret	149.50
B&H 253 Monterey 500W	55.00
DeJur 750W	84.00
Kodak Brownie 300W	39.00
Revere 85 500W	58.50
Revere 90 750W	74.50

Slide Projectors

Argus PS 300 Case	$ 27.00
Guide Manumatic 300W	26.50
TDC Mainliner 300W Semimatic	30.50
TDC Model D 300W Semimatic	36.50
Bruhberger 300W Auto Changer	27.50

MISCELLANEOUS CAMERAS

Ricohflex VI f3.5	$ 21.50
Rolleicord IV f3.5 Xenar MX	74.00
Auto Rollei f3.5 Xenar MX	118.00
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Kodak Medalist I f3.5 Ektar	56.00
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Even in their own land, where quality and craftsmanship are the order of the day, these cameras are considered to be of exceptional design and quality.

Now, the manufacturer finds that because of the rising cost of hand workmanship, on which he refuses to cut down, that these cameras will have to sell for "still more."
We think "still more" is too much, even for these fine precision instruments. We are herefore clearing our shelves at prices below the former wholesale cost.

- Schneider Xenar f2.8 Prontor SV (with 1 to 1/300 Second)
- Flash and Strobe synchronized
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INTERCHANGEABLE LENSES (Wide Angle and Tele Available at Low, Low Cost)
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Brand New 1955 35mm Internationally Famous Camera with the latest Automatic Rapid Advance Lever. With one easy flip of the thumb a frame is transported, the exposure counted, double exposure prevention locked into place, the shutter is set, and PRESTO! you are ready for the next shot.
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w/100 ft. fresh safety film Kodak Plus X or XX 8.39

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20 EXP.
1 ROLL, $1.50—4 ROLLS, $5.49
DAYLIGHT OR INDOOR

Kodak's HI-SPEED TRI-X
A Miracle in Black & White
35mm — 20 exp. — 6 for 2.19
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35mm EASTMAN KODAK
Factory Fresh 1956 Dated
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Reloads (Plus X or XX) . . . 36 Exp. 3 for 1.43
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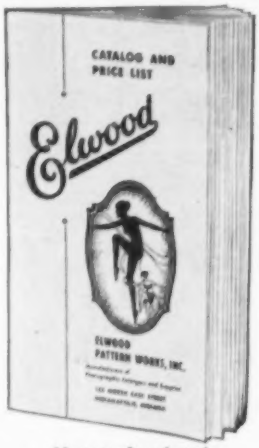

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camera; adjustable camera screw with three locations; single-lock panhead handle; and degree marks for vertical and horizontal pictures. For still cameras from 35-mm to 4x5 and 8- and 16-mm movie cameras. Manufacturer is Testrite Instrument Co., 57 E. 11th St., New York 3, N. Y.

SYNCHROMETER is a coupling rangefinder for Retina IA cameras. One adjustment couples it to the focusing mechanism of the lens. Slipped onto the accessory clip, it is removable when necessary and replaced without adjustment. With a leather case, the price is $19.95 from Spiratone, Inc., 49 West 27th St., New York 1, N. Y.

LIGHTWEIGHT TRIPODS of magnesium and aluminum are announced by Saul Bower, Inc., 114 Liberty St., New York 6, N. Y. Among features are: top sections covered with ribbed composition; grooved legs for rigidity; removable rubber tips on feet for outdoor use; each section locks with a double pin; a reversible tripod thread for American or foreign-type sockets; and both collapse to 14 inches. Dimensions, weight, and prices are respectively: four-section, 47 in. extended, 14 oz, $6.95; five-section, 58 in. extended, 16 oz, $9.95.

DO-IT-YOURSELF Test Kit of four different 5 x 7 photographs of ideal quality for coloring is a product of John G. Marshall Manufacturing Co., 167 N. 9th St., Brooklyn 13, N. Y. Price is $1. Marshall also offers, free of charge, the new booklet, **Make Life More Colorful.** Marshall's Photo Oil Sets for coloring photographs range in price from $1.50 to $13.95.

ANSCO, Binghamton, N. Y., announces price reductions of six cents per roll and 21 cents per 3-roll pack of Plenachrome film.

BROMIDE-TYPE sensitized canvas for enlarging use by photographers and artists is now available in roll form with test strips. Prices start at $40 for a roll 16-in. wide by 15-ft long. An 11 x 14-in. sample is $1, deductible from a future order. Write General Photo Mfg. Co., Inc., Andover, N. J., for more information.

DAPTAFLEX, a product of Waring Cleveland Instrument Co., 20350 Center Ridge Road, Cleveland 16, is an adapter for twin-lens reflex cameras, permitting their use in macrophotography or other types of close-up work. Parallax is completely eliminated, since raising the taking lens moves it into the position formerly occupied by the viewing lens. Price is $14.50.

THREE GUIDE TABLES sufficiently accurate to satisfy the liking for "natural" color effects under various lights are offered by Sylvania Electric Products Inc. They contain recommendations for filters and exposures for three different types of color film with each of the seven varieties of "white" fluorescent lamps. Sylvania's address is 1740 Broadway, New York 19, N. Y.

KOPIL SELF-TIMER, imported by Photographic Importing and Distributing Corp., 67 Forest Rd., Valley Stream, N. Y., has been redesigned and now has a knob to adjust the desired delay in seconds, from 0 to 15. A Leica nipple is standard equipment and has a universal thread permitting use with most German and domestic shutters. Price is $2.95.

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Reloads—20 Exp. .....6 for 1.75
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Bulk Film—100' 3.75

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NO FILM LIKE IT...
200 DAYLIGHT—160 TUNGSTEN

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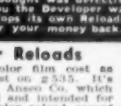
When dissatisfied with results from Reloads, don't let the Developer say that the Reload you bought was defective or don't let the Reload Seller tell you the Developer was at fault. PANORAM spools and develops its own Reloads, and GUARANTEES perfect results or your money back.

#535 ANSCO Color Reloads
Why not enjoy the same low color film cost as economy wise professionals! Insist on #535. It's the only Color Film made by the Ansco Co. which is notched, numbered, fresh dated and intended for amateur use. Any other Ansco color reload except #535 is a Hollywood Short End and could be years & years old. Don't be deceived! Insist on #535. Daylight or Tungsten.

PRICE INCLUDES DEVELOPING AND CUSTOM MOUNTING
20 Exp.
1 Roll 1.95
3 Rolls 5.55



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2¼x3¼ ..25¢ ea.
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5x7 .....80¢ ea.
8x10 .....75¢ ea.

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Ansco Color Ektachrome	1 Rl. 1.00	2 Rls. 1.85	3 Rls. 2.65
120-620 Ansco or Ektachrome	1 Rl. 1.00	2 Rls. 1.75	3 Rls. 2.50

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3X (1½x3) ...Now .20 ea.
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4x5	5x7	8x10	Slide Duplicates
50¢	85¢	1.75	6 For 1.00

35mm 20 Exp. Reloads | New Ektachrome.....4 for 5.75 | Ansco Color 535.....4 for 4.50 | Kodak Miracle Tri-X .....6 for 2.50

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2 x 3¼ .....19¢ ea.—Any 6 for 1.15
2½ x 3¼.....23¢ ea.—Any 6 for 1.35
3¼ x 4 .....43¢ ea.—Any 3 for 1.25
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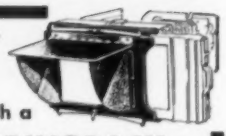

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ADVERTISERS	PAGE NO.
A. C. M. Co.	154
Ace Camera Exchange	24
Air Photo Supply Corp.	33
Airequipt Manufacturing Co., Inc.	152
Alco Photo Supply Corp.	124
American Optical Company	49
American Photographic Book Pub. Co.	150
American School of Photography	154
Ansco	SECOND COVER
Arrow Metal Products Company	124
Art Center School, The	153
Atkinson Laboratory	158
Barrett, Benson	153
Bass, Inc., Alfred	154
Bass Camera Co.	156
Bell & Howell	138
Beseler Company, Charles	35
Brockway Director Corporation	3
Brooks Cameras	109
Brooks Institute	142
Brown-Forman Industries	118
Burke & James, Inc.	115
Burleigh Brooks, Inc.	13
B. I. C.	155
Calumet Manufacturing Company	145
Camera Import Corp.	125
Canon Sales Co., Inc.	25
Capital Camera Co.	153
Central Camera Co.	155
Cohen's Exchange, Inc., Abe	116, 117
Color King Labs	34
Color-Pix, Inc.	156
Columbian Enameling & Stamping Co., Inc.	154
Da-Lite Screen Co.	45
Davidson Star-D Company	140
Delpro Sales Co.	132
Delta Photo Supply	26
Dowling's	18, 19, 20, 21, 22, 23
Eastman Kodak Company	FOURTH COVER, 106, 107
Edixa Camera Works Wirgin Brothers	32
Edmund Scientific Corp.	168
Elwood Pattern Works	158
Enteco Industries, Inc.	114
Exakta Camera Company	11
F R Corporation, The	126
Federal Manufacturing & Engineering Corp.	121
Freestyle Sales Co.	132
Galef & Son, Inc., J. L.	146, 147
Geiss-America	144
General Electric	THIRD COVER
Germain School of Photography	156
GoldE Manufacturing Company	131
Golden Gate Color Prints	159
Graflex, Inc.	28, 148
Grand Central Camera Exchange, Inc.	43
Heiland	133
Interstate Photo Supply Corp.	16
Kalart Co., The	110, 111
Kin-Dar Corp., The	141
Kinnard Co.	145
Konica Camera Co.	6
La Belle Sales Corp.	127
Leitz, Inc., E.	31
Lisco Products Co.	156
Mamiya Camera Company of America, Inc.	142
Marshall Mfg. Co., Inc., J. G.	42
Massachusetts Dept. of Commerce	155
Miniature Film Supply Co.	159
Minicord Sales	142
Minifilm Camera Corp.	7, 8, 9, 151
National Photo Labs	30
Nega-File Company, The	150
New York Institute of Photography	14, 15
Nikon Incorporated	36
Nuclear Products Co.	145
Olden Camera & Lens Co.	46, 47
P D Q Camera Co.	150
Paillard Products, Inc.	51
Panoram Film Labs	159
Peerless Camera Stores	37, 38, 39
Penn Camera	123
Perrin & Co., Inc., J. B.	132
Photography Directory	143
Photoptic Corporation	119
Popular Photography	128, 129
Radiant Mfg. Corporation	27
Ray-Vogue	150
Ritz Camera Centers	112, 113
Russ Photo Service, A.	153
Saltzman, Inc., J. G.	155
Service Manufacturing Company, Inc.	158
Servicemens Color Print Co.	159
Simmon Brothers, Inc.	154
Spiratone, Inc.	48
Sterling-Howard	5
Strato-Color Research Laboratories	120
Superior Bulk Film Company	124
Supreme Photo Supply Co.	44
T V Workshop	158
Tiffen Marketing Company	10
Three Dimension Company	139
Voigtlander	17
Wall St. Camera Exch.	149
Ward, Montgomery	156
Western Photo Sales	157
Weston Exposure Meters	12
Willoughby's	40
Wollensak Optical Company	29
Zeiss, Inc., Carl	41, 108

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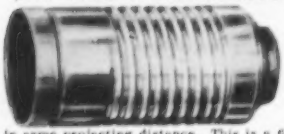

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Flat polished discs of specially treated glass designed to absorb heat from optical systems of projectors, enlargers, etc. Not mounted. 5/64" thick. You can't buy it at a lower price!
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Make your own high power telephoto lens. Mounted, air-spaced achromatic objective, with excellent color correction. Taken from the U. S. Army Heightfinder, M1 (Govt. cost $100.00). Also makes wonderful telescope objective. F.L. 18.25", clear aperture 2 7/16", speed f/7.5.
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Imported from Germany. Low cost. Use for building enlargers, cameras, optical instruments, etc. With handle. O.D. 2¼". Maximum aperture—1⅝". Minimum aperture—1/8".
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Palomar, Jr. 4¼" Reflecting Telescope complete with tripod

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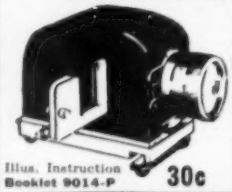
The same fine mirror as above, polished and aluminized, lenses for eyepieces and diagonal. No metal parts. **Stock No. 50,074-P** **$16.25 pstpd.**

BUILD YOUR OWN! 35mm. Slide Projectors



Illus. Instruction Booklet 9014-P **30c**

Thousands of our customers have made their own projectors. Excellent results! Money saved! NOTE: We do not furnish metal parts except focusing mount in kit #4068-P.

Contains f/1.9 projection lens in focusing mount, 2 condensers, heat absorbing glass, full instructions.
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Take Pictures at Night—in Movies, etc.

Fasten it over your flash reflector as an infra-red light source. For use with infra-red camera attachments, telescopes, etc. Light from your light source is filtered so that only infra-red light hits subjects. 5⅛" diam., ⅛" thick.
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One of the greatest scientific toys we have ever offered! Designed by Armand Spitz, world-famous maker of the Spitz Planetarium. Projects nearly 400 stars, more than 70 constellations in their correct relationships. Use it in any darkened room of the house, project it on the ceiling. No batteries, works on ordinary household current. Two simple adjustments that show you the sky as it appears from any point in your hemisphere . . . for any month of the year! Rheostat control for brightness.

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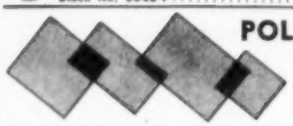

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	Stock. No.	Price Pstpd.
How to Build Projectors	9014-P	30c
Homebuilt Telescopes	9006-P	40c
Method to Clean Precision Optics	9024-P	15c
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Homemade Stereo-Adapters	9032-P	30c
Homemade Stereo-Viewers	9034-P	30c
Photo Micrography with Pen Microscope	9029-P	10c
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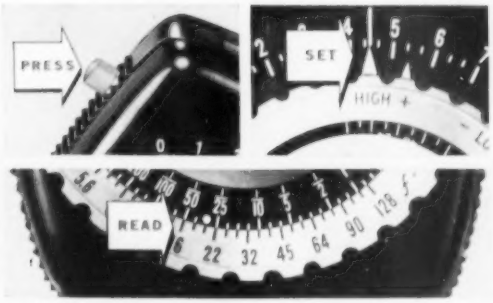

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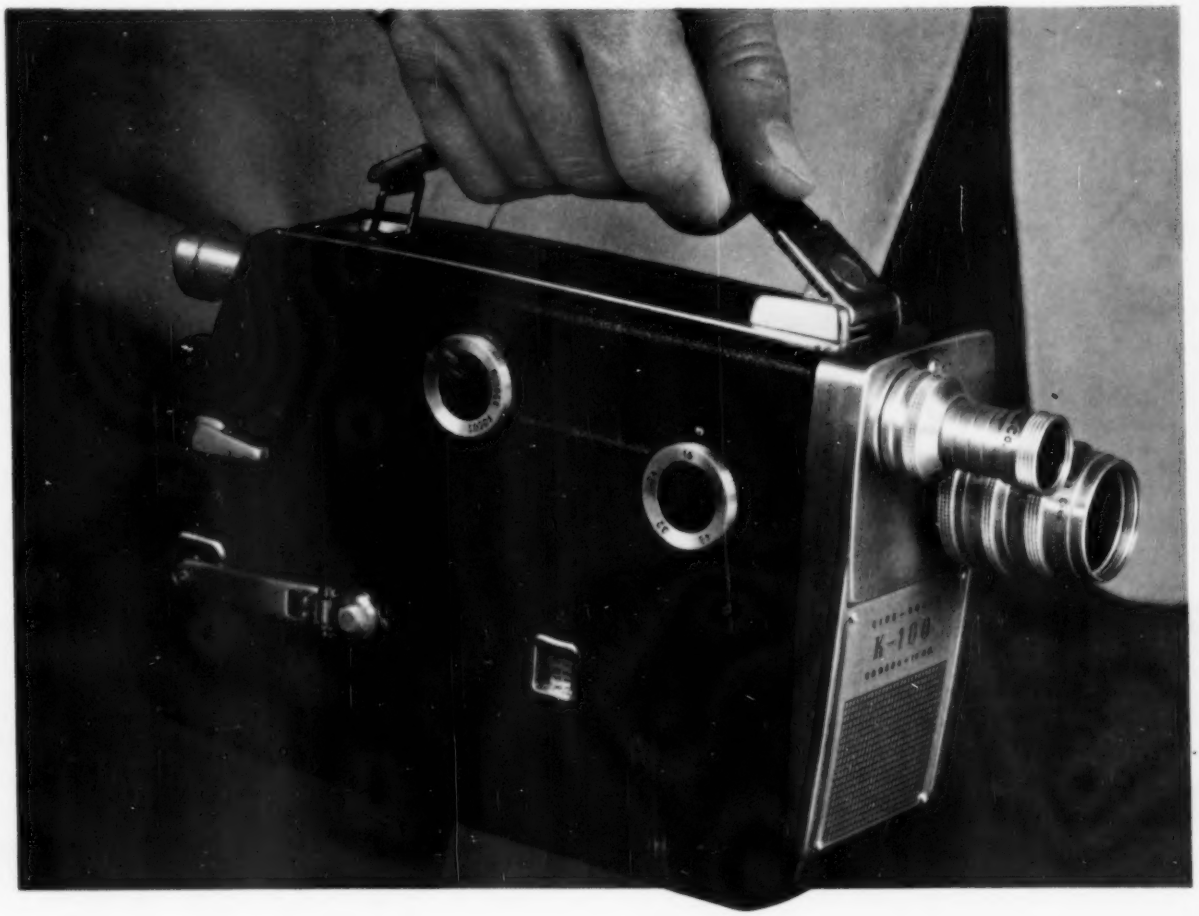

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